

Hampshire Country Club Planned Residential Development
Village of Mamaroneck,
Westchester County, New York
Final Environmental Impact Statement

G Preliminary Construction Work Plan





PRELIMINARY CONSTRUCTION WORK PLAN

Hampshire Country Club Planned Residential Development
Village of Mamaroneck, New York

August 2018

Prepared for:

Hampshire Recreation LLC
60 Cutter Mill Road
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1. Introduction

This Preliminary Construction Management Plan CWP has been prepared to provide contractor responsibilities and expected project execution steps for construction of the proposed development and the safeguards to protect the environment, adjacent property owners and Village residents. The following provides expectation to be satisfied prior to the start of construction and during performance of construction. The CWP provides the following:

- Project contacts
- Construction Phasing
- Preconstruction requirements
 - Staking of Limit of Disturbance
 - Soil Erosion controls
 - Tree Protection
 - Preconstruction Photos
 - Public Outreach
 - Preconstruction Coordination
- Record Keeping
- Site Security
- Construction Truck Traffic
- Construction Health and Safety
- Material Handling
- Tree Removal
- Soil Erosion Measures
- Rock Removal
- Construction Noise

2. Project Description

The site is located in the southern portion of the Westchester County in the Village of Mamaroneck and Village of Mamaroneck, NY. It's also situated just north of the Long Island Sound. Currently, the subject site consists of a golf course and a club house. The site is approximately 94.5 acres (R-20 zone) of which approximate 2.7 acres is impervious. The rest are golf course, overgrown and grass areas.

The project will redevelop the current Hampshire Country Club by converting a portion of the existing 18 hole golf course into a planned residential development (PRD) containing 44 unit of single family subdivision and 61 unit carriage homes. The remainder of the golf course will be converted to a nine hole golf course surrounding the residential development starting and ending at the existing club house which will be maintain in the finished condition.

3. Project Contacts

The following is the contact information for the project representatives, project contractor, and responsible municipal oversight.

Owner:

Hampshire Recreation LLC
c/o New World Realty Advisors, LLC
60 Cutter Mill Road, Ste. 513
Great Neck, NY 11021
Contact: Dan Pfeffer
(646) 723-4750
dpfeffer@nwradvisors.com

Contractor:

TBD

Village of Mamaroneck
Engineering Department:

Village of Mamaroneck
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Village of Mamaroneck
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White Plains, NY 10601
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Mike.Junghans@kimley-horn.com

Environmental Engineer:

GZA GeoEnvironmental
104 West 29th Street, 10th Floor
New York, NY 10001
Contact: Steve Kline, PE
(212) 594-8140
stephen.kline@gza.com

4. Construction Phasing

Construction activity for the proposed development will be performed by first excavating, grading and filling to establish development sites for single family and carriage homes. Next utilities will be installed within the streets followed by placement of road bed and sidewalks. The housing will then be constructed on finished lots followed by surface treatments including topsoil and seeding, and driveways.

Based on the size of the site work must be performed in phases to minimize the area of disturbance at any given time. Excavation and filling activities will be performed in two steps; Step 1). Establishment of realigned Cove Road and single family lots, and Step 2). establish three extensions to realigned Cove Road including Cooper Road extension, realigned Eagle Knolls Road and Road A. This approach establishes the central spine of the project providing the connection between Cove Road and Eagle Knolls Road and establishment of the core utilities for the project within realigned Cove Road. Soil disturbance activities will minimize total area of soil disturbance to 5 acres or less at any given time. The 5 acres increments and the expected progression of work is shown on the Construction Phasing Plan attached as Appendix 1.

Once construction of the proposed development commences, it is estimated for Step 1 that there will be approximately 24 soil fill trucks per day (on a five-day per week schedule) for the first 9 months of construction. During the initial 9 months excavation and filling activities will be performed to construct realigned Cove Road and adjacent single family lots. Following establishment realigned Cove Road, the number of soil fill trucks will begin to diminish to 3 or 4 trucks per day in Step 2 of the project.

In Step 2 of soil excavation and filling activities, soil import will continue at a reduced rate to establish Copper Road Extension, realigned Eagle Knolls Road and Road A. During this period construction of the single family homes on realigned Cove Road will commence. After Step 2 soil excavation and filling activities complete, housing construction will commence in those areas. Housing would be constructed when there is a buyer and it is anticipated that about 20 units would be constructed yearly.

The exact construction schedule is contingent on the build out rate of the homes; therefore, the duration of the construction period and the final build-out date are unknown at this time.

5. Preconstruction Requirements

The following requirements must be completed prior to start of construction activities to the satisfaction of the Village Engineer and Building Department representatives.

5.1 STAKING OF LIMIT OF DISTURBANCE

Prior to implementation of any site disturbance activities, the contractor shall stake the limit of disturbance for the project providing labeled survey stakes in 50-foot intervals along the limit of disturbance for the project. Following staking of the limit of disturbance, the contractor shall notify the Village Engineer and project Civil Engineer to allow inspection of the staked limit. Any field conditions that warrant adjustment of the limit of disturbance as shown on the engineering drawings shall be communicated to the Village Engineer and project civil engineer to resolve discrepancy.

5.2 SOIL EROSION CONTROLS

Soil erosion controls shall be implemented prior to the disturbance of any soil. Soil erosion control measures will be based on the requirements of the New York State Department of Environmental Conservation ("NYSDEC") Standards and Specifications for Erosion and Sediment Control, latest edition, and the engineering drawings for the project.

Erosion control measures shall be implemented to minimize or control erosion on site. These include but not limited to silt fence, straw bale, inlet protection, stabilized construction entrance, concrete truck wash-out area and stock pile area. Fencing will be placed around trees to be protected. Other site preparation including setting up of staging area, construction fence, temporary access road.

Controls shall be tailored to the limit of disturbance of construction and be adjusted as construction progresses through the project. Any soil disturbing activities shall be accompanied by the required soil erosion control measures. The Contractor will be required to coordinate with the project civil engineer prior to start of soil disturbance activities the placement movement of soil erosion measures.

The project engineer in accordance with NYSDEC requirements, will provide for inspections of soil erosion measures by a qualified inspector prior to the start of soil disturbance activities. Inspections will be documented by field notes and site photos and will provide a summary of observations, work being performed and corrective actions required. The inspections reports will be provided to the contractor, project owner and Village MS4 and will be available at the Village for review by the public.

Erosion control measures shall be implemented to minimize or control erosion on site. These include but not limited to silt fence, straw bale, inlet protection, stabilized construction entrance, concrete truck wash-out area and stock pile area. Fencing will be placed around trees to be protected. Other site preparation including setting up of staging area, construction fence, temporary access road.

5.3 TREE PROTECTION

Prior to the start of any soil disturbance, the contractor is required to install all tree protection measures in the vicinity of the proposed area of disturbance in accordance with the engineering drawings. The contractor shall coordinate inspection of the installed tree protection measures by the project civil engineer and Village Engineer.

Tree protection measures shall be inspected on a weekly basis by the project civil engineer to ensure adequacy with ongoing construction activities and recommend adjustments and additions.

5.4 PRECONSTRUCTION PHOTOS

Prior to the start of and construction activities the contractor shall photo document the following:

- all on site areas proposed to be disturbed
- Cove Road from the Site out to Orienta Avenue
- Cooper Road from the Site to Old Boston Post Road

- The entirety of Eagles Knoll Road
- Hommocks Road from Eagle Knolls Road to Route 1.

The photos will serve as documentation of conditions to compared to post construction condition to access impact to approach roads to site. Copies of photos shall be provided in hard copy and electronic form to the Village to be available for public review.

5.5 PUBLIC INFORMATION

The contractor shall provide to the Township engineer weekly summaries of upcoming construction activities including construction traffic routing and proposed days and hours of construction for posting by the Village on the Village website.

5.6 PRECONSTRUCTION COORDINATION

Prior to start of any construction activities, the contractor shall schedule a preconstruction meeting to present the proposed project approach, schedule and responsible parties during construction. The following shall attend the preconstruction meeting:

- Village Engineer
- Village site inspector
- Project civil engineer
- Contractor representative
- Contractor Site Supervisor
- Owner representative

During the meeting the following shall be discussed at a minimum:

- Project contacts
- Emergency response
- Weekly construction meetings
- Shop drawing review protocol
- SWPPP inspections
- Tree removal
- Soil import documentation
- Construction traffic parking
- Construction traffic routing

The Contractor will be responsible to document notes during the pre-construction meeting and distribute to all meeting attendees.

6. Record Keeping

The contractor will be responsible to perform record keeping for the project throughout the development process. Documentation shall be made available to the Village as requested in hard copy or electronic format. The following at a minimum shall be maintained:

- **Engineering Documents:** Hard copies of all current engineering drawings and specifications shall be maintained by the contractor for the duration of the project and be available for review by the project team and Village representatives at the project trailer.
- **Project Schedule:** The contractor shall maintain the project schedule and update on a weekly basis.
- **As Built Plans:** The contractor shall maintain all as-built documentation and perform survey of installed improvements where necessary to document variations in the as-built condition. The contractor will be responsible to utilize collected as-built information to provide a AutoCAD as-built survey of the project documenting all constructed improvements for submission to the Town.
- **Impact Soil Relocation Report:** The contractor shall maintain documentation of the relocation of identified impacted soil on site into the development platform. The report shall provide area of removal and deposition. Collected documentation shall be sufficient to provide the horizontal and vertical limits of the deposition of impacted soil and the institutional controls deployed to prevent potential exposure in the future.
- **Soil Import Documentation:** The contractor shall maintain manifests for all soil fill imported to the site including volume, origin of material and required quality documentation. The contractor shall maintain copies of all meeting notes for the duration of the project and be available for review by the project team and Village representatives as requested.
- **Dust Monitoring Report:** The contractor shall maintain all dust monitoring reports and distribute weekly summaries to the Village indicating and exceedances and resulting corrective action. The contractor shall maintain copies of all meeting notes for the duration of the project and be available for review by the project team and Village representatives as requested.
- **Shop Drawings and Requests for Information:** The contractor shall be responsible for the documentation, distribution and follow up of initial and reviewed shop drawings to the project team. The contractor shall provide an on-line site for to access all shop drawings accessible to the project team and Village representatives.
- **Construction Stake out:** All survey stake out cut sheets prepared by the contractor's surveyor shall be maintained by the contractor for the duration of the project and be available for review by the project team and Village representatives.
- **Construction Meeting Notes:** The Contractor shall be responsible to document notes during weekly construction meeting and distribute to all meeting attendees and Village representatives. Notes shall be either available in hard copy or electronic format. The contractor shall maintain

copies of all meeting notes for the duration of the project and be available for review by the project team and Village representatives as requested.

- **Construction Photos:** The contractor shall maintain daily pictures of construction activities to document the progress of the project. The contractor shall maintain copies of construction photos for the duration of the project and be available for review by the project team and Village representatives as requested.

7. Site Security

The contractor will be required to provide secure all active areas of construction to prevent unwanted access to the construction site. All active work areas shall be enclosed by a temporary construction fence of a minimum height of 6 feet with controlled access points maintained by the contractor. Signage shall be provided including contractor and emergency contact information and direction for site visitors to report to the construction trailer and sign in with site personnel.

The contractor shall provide video cameras at each access point to the site to monitor incoming and outgoing traffic and access to the site. Cameras shall record 24 hours a day and be connected to a central location that provides a minimum, of one week of video back-up.

8. Construction Truck Traffic

All construction trucks accessing the Project Site will be required to use I-95, exiting at either Exit 17 (to and from the south) or Exit 19 (to or from the north) to use Boston Post Road (US Route 1) to get to and from Hommocks Road and Eagle Knolls Road. There will be no truck access allowed via Orienta Avenue or East Cove Road. When school is in session, truck access to the Project Site will only be permitted between 8:15 am and 2:30 pm, as well as between 4:00 pm and 7:00 pm. Construction truck routes are depicted in Exhibit 2-19.

9. Construction Health and Safety

The proposed project will require the on-site excavation, handling and relocation of soil identified to be impacted with contaminants. To safeguard worker health a Construction Health and Safety Plan (CHASP) has been prepared for the proposed activities and is attached in Appendix 2.

The CHASP addresses measures to minimized worker exposure to impacted soil by contact, inhalation and ingestion through worker education, establishment of safety protocols, hazard response, and implementation of active dust monitoring. Each worker, contractor employee or subcontractor, involved in management of impacted material will be required to review the CHASP and acknowledge their understanding of the document requirements and expectations.

The CHASP provides a dust monitoring program that will be implemented during construction to minimize dust generated from impacted soil and provide mitigation measures. Based on the site specific levels of contaminated soil, airborne dust monitoring levels that require a response, Action Levels, have been developed to safeguard on site and downwind receptors. If an action level is reached, the contractor is

required to perform stipulated mitigation steps to reduce dust levels. Dust monitoring will be performed upwind to establish back ground levels and downwind to assess impact of construction activities. Dust monitoring data will be electronically logged and summaries will be provided to the Village on a weekly basis.

10. Material Handling

In addition to the above CHASP, the contractor must implement the a Material Handling Plan (MHP) developed for the project to provide a protocol for quality review imported soil, movement and placement of impacted on site soil and installation of institutional controls to isolate identified impacted material. The project does not seek to remove any impacted soil from the site. A copy of the MHP is attached as Appendix 3.

The attached MHP provides testing requirements of off site soil sources proposed to be utilized as on-site fill. All soil import sources will be required to provide soil testing data from a certified laboratory that the import soil is free of contamination and meets required engineering properties. Testing data will be required to be submitted and approved by the project geotechnical engineer and Village engineer before being allowed to commence import. The contractor will be responsible to keep records of the location of placement of each soil source within the fill area phase.

The attached MHP also provides handling requirements for CHASP addresses measures to minimized worker exposure to impacted soil by contact, inhalation and ingestion through worker education, establishment of safety protocols, hazard response, and implementation of active dust monitoring. Each worker, contractor employee or subcontractor, involved in management of impacted material will be required to review the CHASP and acknowledge their understanding of the document requirements and expectations.

11. Tree Removal

Prior to removal of trees, the contractor shall mark all trees adjacent to the limit of disturbance to be removed by marking them with an "X" in paint. The contractor shall notify the Village Engineer and project civil engineer to inspect the marked trees. The contractor shall then obtain a written approval from the Village Engineer to allow implementation of tree removal. All tree material shall be removed from the site and shall not be used as backfill or stored on site. The tree removal plan is included as Appendix 4

12. Soil Erosion Measures

The SPDES General Permit GP-0-15-002 requires that the owner/operator be responsible for inspecting and maintaining the erosion control practices implementing on site. The owner/operator must document compliance with the permit throughout the entire construction process.

A) Inspection

- The owner/operator shall have a qualified inspector inspect all erosion and sediment control practices to ensure their integrity and effectiveness throughout the entire construction process.
- The qualified inspector shall perform inspection at least once every seven (7) calendar days. If construction work includes soil disturbance of greater than five (5) acres, qualified inspector shall conduct at least two (2) site inspections every seven (7) calendar days with minimum separation of two (2) full calendar days.
- Within one business day of the completion of an inspection, the qualified inspector shall notify the owner/operator and appropriate contractor or subcontractor of any corrective actions shall be taken.
- The qualified inspector shall prepare an inspection report in accordance with the permit subsequent to each and every inspection. The owner/operator shall maintain a record of all inspection reports in a site log book as part of the updated SWPPP and shall be make available upon request by permitting authority.

B) Maintenance

- Sediment shall be removed from behind silt fence or straw bale if accumulation of greater than 6-inches deep or as needed.
- Sediment that is collected in inlet protection practice shall be removed on a regular basis to ensure the integrity of the drainage inlet system.
- The underside of straw bale shall be kept in close contact with the ground surface.
- Straw bale and silt fence that are damaged shall be replaced or as necessary.
- On site's paved areas shall be swept on an as needed basis during the construction process.
- The contractor or subcontractor shall begin implementing the corrective actions within one business day of the notification from qualified inspector and shall complete the corrective actions within a reasonable time frame.

Refer to Appendix 8 of the SWPPP for inspection and maintenance schedule; and refer to Appendix 9 for sample of construction site log book.

13. Rock Removal

Based on the composition of the bedrock, blasting will be required for removal. During construction careful attention must be paid to the neighboring properties during construction. The selected blasting shall be a New York State licensed blasting contractor.

The selected contractor will prepare a written Blasting Plan in accordance the with the Village of Mamaroneck Village Code Chapter 120 and the New York Department of Transportation "Geotechnical Engineering Manual: Procedure for Blasting" latest edition (Appendix 5), providing a detailed description of

the means and methods of the proposed rock removal program. This plan will be forwarded to the Town Engineering Department and Building Department for review. The Blasting Plan will contain the following:

1. Project Designations

- Name of Project Blaster(s).
- Photocopy of the Project Blaster's Explosives License (Own & Possess) and Certificate of Competence.
- Scheduled start date and length of blasting operations and blast monitoring operations.
- Limits of blasting work.
- Requirements for local permits.
- Location of any structures in proximity to the blasting.
- Location of any utilities in proximity to the blasting.
- Location of any contaminants or flammable liquids or vapors in the area to be blasted.

2. Safety and Health Requirements

- Type of audible warning signals and signal sequence.
- Name of company that will deliver explosives to the project site.
- Location of any preblast surveys.
- Location of any vibration monitoring at State owned structures, utilities on or off State ROW, or privately owned structures off State ROW.
- Location of any air blast overpressure monitoring.
- If seismographs will be used, provide the manufacturer's name, model number, and documentation of calibration performed within the last 12 months. Also provide name(s) of seismograph operators and relevant training and experience.
- List steps that will be taken to control flyrock (i.e. blasting mats).
- Are carbon monoxide or other noxious fumes likely to migrate from the blast location or accumulate within nearby structures and, if so, what will be done to detect and prevent their migration.

3. Methods and Procedures

- Type of drilling equipment.
- Method of collaring and aligning presplit drill holes.
- Hole diameter.
- Drilling pattern.
- Use of sequential timer.
- Types of explosives, primers, initiators, and other blasting devices. Include manufacturer's technical data sheets and material safety data sheets for all products.
- Loading parameters:

The blasting contractor will have a Pre-Blast meeting with representatives of the Village Engineering and Building Departments to review schedule, field activities and vibration and noise monitoring. The blasting contractor will provide weekly updates to the Town and hold weekly progress meetings.

14. Noise

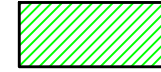
Noise from construction activities shall be limited to the hours of 8:00 a.m. and 6:00 p.m. Monday through Saturday in accordance with the Village of Mamaroneck Village Code, Chapter 254, Noise shall be limited to typical construction equipment in good working order. Malfunctioning equipment generating excessive noise shall be immediately taken out of service.

Appendix 1 – Construction Phasing Plan

Plotted By: Cheong, Jason Sheet Set: kha Layout: C-7 Phasing August 30, 2018 03:58:03pm K:\WP_Civil\112056005_Hampshire\CC\6_CAD\Plotsheets\2867702_PLOT.dwg
This document, together with the concepts and designs presented herein, is an instrument of service, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of any information contained herein without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



Legend

 Initial Work Area

HAMPshire COUNTRY CLUB PLANNED RESIDENTIAL DEVELOPMENT (P.R.D.) PREPARED FOR HAMPshire RECREATION LLC VILLAGE OF MAMARONECK NEW YORK		PHASING PLAN		KHA PROJECT 112056005 JUNE 25, 2015 SCALE: AS SHOWN DESIGNED BY: MWJ DRAWN BY: DAR CHECKED BY: MWJ		 LICENSED PROFESSIONAL		Kimley»Horn of New York, P.C. © 2017 KIMLEY-HORN OF NEW YORK, P.C. Engineering, Planning, and Environmental Consultants 1 N Lexington Ave, Suite 1575 White Plains, NY 914-368-9200		Kimley-Horn of New York, P.C.	
SHEET NUMBER C-7											

Appendix 2 – Construction Health and Safety Plan



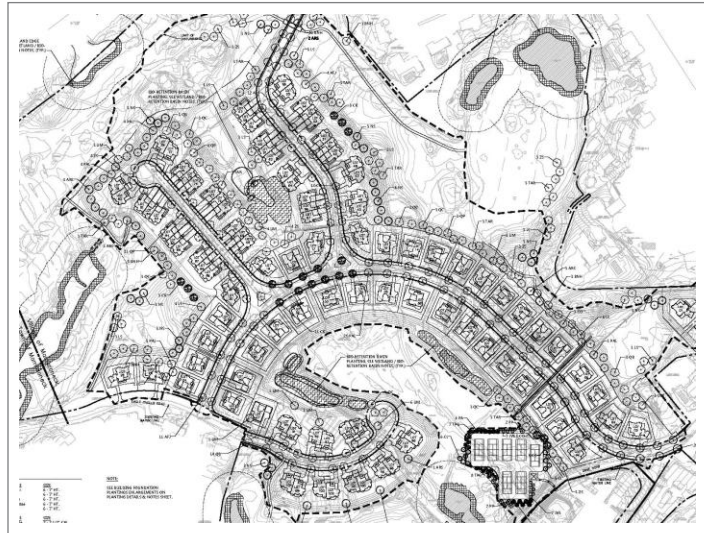
Proactive by Design



CONSTRUCTION HEALTH AND SAFETY PLAN

**Hampshire Country Club
Planned Residential Development
Village of Mamaroneck
Westchester County, New York**

September 2018
File No. 41.0162548.10



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1.0 INTRODUCTION

1.1 OVERVIEW

This project-specific Construction Health and Safety Plan (CHASP) has been developed by GZA GeoEnvironmental of New York (GZA) on behalf of Hampshire Recreation LLC (Client) to establish procedures for the protection from potential contaminated materials resulting from the Hampshire Country Club Planned Residential Development (PRD) project located in the Village of Mamaroneck, Westchester County, New York (Site).

1.2 PURPOSE AND APPLICABILITY

The purpose of this CHASP is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide for contingencies that may arise during the completion of PRD excavations at the Site. The CHASP is intended to minimize health and safety risks resulting from the known and potential presence of residual pesticides and herbicides from horticultural uses during operation as a golf course.

Note that this CHASP is NOT designed to address potential geotechnical, mechanical, or structural safety concerns, and is NOT intended to supersede or replace any U.S. Occupational Health and Safety Administration (OSHA) regulation and/or local and state construction codes or regulations. This CHASP is intended to supplement the Construction Contractor's (Contractor's) Safety Program. The procedures in this plan have been developed based on current knowledge regarding the hazards which are known or anticipated for the operations to be conducted at this Site. Work subject to this CHASP is specific to activities that disturb the soil during Site redevelopment. The Contractor and its subcontractors involved in the construction project will inform their workers of and provide a copy of this CHASP to their employees whose work involve potential exposure to the on-site chemical hazards and will complete all work in accordance with CHASP. All work outlined within the CHASP is subject to the standards under 29 CFR Part 1926 (Safety and Health Regulations for Construction).

1.3 SITE HAZARDS

This CHASP covers only the hazards associated with potential chemical exposures. Physical hazards such as injuries from typical excavation field work activities, including the operation of heavy equipment, noise exposure, heat and cold stress, electrical hazards, fire hazards, excavation hazards and general safety hazards associated with walking on working surfaces (trip and fall) are covered by the Contractor's safety program.

The construction activities call for the handling, transport and disposal of soil, fill, and other materials removed from the property during Site activities that may pose chemical exposure



hazards. Potential chemical exposure hazards include skin contact, ingestion and inhalation hazards which may result from the presence of inorganic metallic elements (metals) and pesticides on-Site. The potential adverse health effects from these detected contaminants are diverse. Many of these compounds are known or suspected to result in chronic illness from long-term exposures. However, due to the limited nature of the proposed construction, only acute effects are a potential concern. See **Section 2.0** for detailed chemical hazard information.

1.4 PROJECT TEAM

The organizational structure established for the implementation of construction health and safety requirements established by this CHASP, include identifying personnel who have been assigned specific authority to implement and enforce the provisions of this CHASP. Prior to the construction, the appropriate personnel identified in the table below will be notified:

Name	Project Title/Assigned Role	Contact Information
Dan Pfeffer	Owner	Hampshire Recreation LLC c/o New World Realty Advisors, LLC 60 Cutter Mill Road, Ste. 513 Great Neck, NY 11021 T: (646) 723-4750
TBD	Project Superintendent / Contractor	TBD
Michael Junghans, PE	Civil Engineering	Kimley-Horn of New York PC 1 N. Lexington Avenue, Suite 1575 White Plains, NY 10601 T: (914) 368-9189
Stephen M. Kline, PE	Environmental Consultant	GZA GeoEnvironmental of New York 104 West 29th Street, 10th Floor New York, NY 10001 T: (212)594-8140
Hernane De Almeida	Village of Mamaroneck Engineering Department	Village of Mamaroneck 169 Mount Pleasant Avenue Mamaroneck, NY 10543 T:(914) 825-8758

The control of Site hazards is dependent upon the degree to which management enforces compliance and employees cooperate with the specified health and safety requirements.



Therefore, personnel at all levels of the organization must recognize their individual responsibility to comply. All activities covered by this CHASP must be conducted in compliance with this CHASP and with applicable federal, state, and local health and safety regulations, including 29 CFR 1926. The Contractor shall designate its Construction Project Superintendent, Site Safety Coordinator and Site Safety Managers.

The "Project Superintendent" is responsible for all management of health and safety policies, which includes the need for effective oversight and supervision of project staff necessary to control the Health and Safety aspects of on-Site activities. However, supervisory personnel from all subcontractors share responsibility for compliance with Health and Safety programs, policies, procedures and applicable laws and regulations. The Project Superintendent must be a "Competent Person", as defined by OSHA 1926.20(b) - Accident Prevention Responsibilities, is the individual "who is capable of identifying existing and predictable hazards in surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them." The Project Superintendent is responsible for the site control aspects of this CHASP. Personnel covered by this CHASP who cannot or will not comply must be excluded from Site activities by the Project Superintendent.

The Contractor may delegate a "Site Safety Coordinator" or "Site Safety Manager" (SSM) who is a Competent Person, as defined by OSHA 1926.20(b), and a Qualified Environmental Professional, as defined by New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for Site Investigation and Remediation Division of Environmental Remediation (DER-10), to be responsible for making sure the safety policies and procedures are being followed on site. As defined by DER-10, a Qualified Environmental Professional, is a person, including a firm headed by such person, who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding the presence of releases or threatened releases to the surface or subsurface of a site or off-site areas, sufficient to meet the objectives and performance factors for the areas of practice identified by the DER-10.

The Contractor SSM is responsible for day-to-day implementation of the safety program including the air monitoring, and decontamination aspects of the of this CHASP. The SSM is also responsible for incident investigations, first aid and incident management. The SSM will report directly to the Project Superintendent (or designee selected by the Project Superintendent).

2.0 HAZARD ASSESSMENT

The following hazard assessment applies only to the activities within the specified scope of this CHASP.



2.1 JOB HAZARD ANALYSIS

A Job Hazard Analysis (JHA) is a systematic way of identifying the potential health and safety hazards associated with the activities required for completion of the work and the methods to avoid, control, and mitigate those hazards. The JHA will be used to train work crews in proper safety procedures during training prior to each phase of work. This JHA was prepared using general knowledge of the project site and the typical hazards that may be present during performance of this specific scope of work. On-Site hazards may vary from day to day and are dependent on several factors. When planning personnel's daily activities, the Contractor and its subcontractors must consider on-Site hazards.

Phase of Work: Pre-Construction and Site Preparation

Tasks: Mobilization and Demobilization of Equipment and Supplies, Establishment of Site Security Work Zones and Staging Areas, Delineate and Protect Utilities located on site and those leading to and from the Site, Site Preparation (on-site roads, installation of soil erosion measures, temporary facilities, etc.), Prepare decontamination pads and facilities, Develop and Create Staging Area for Materials Storage, Collection of Waste Characterization Samples (if necessary).

Phase of Work: Intrusive Construction Activities

Tasks: Heavy equipment operations, construction activities near utility lines (above and below ground), and electrical lighting. Benching for slope protection in the excavation areas, Protect and support excavation areas in proximity to overhead and underground utilities, Excavation of materials including rock, Staging and stockpiling materials (for on-site re-use and imported fill), Installation of foundation elements, Installation of utilities in excavations, Backfill and compaction of excavation areas, Maintenance of soil erosion and sedimentation control measure.

2.2 CHEMICAL HAZARDS AND KNOWN/ SUSPECT CHEMICALS OF CONCERN.

The chemical hazard information provided below is based on data provided in the Phase I Environmental Site Assessment Report dated April 2016, the Limited Phase II Environmental Site Investigation Report, dated April 2016, and information from the Village of Mamaroneck and the NYSDEC. During the investigations, representative Site soils were collected and analyzed for contaminants of concern. Constituents identified, based on the analysis, with exceeding concentrations and their respective health effects are listed below for reference. Information presented is based upon established OSHA permissible exposure limits (PEL) and The National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs) with time-weighted average (TWA). All other analytical parameters were reported within acceptable levels for Site land use. It is GZA's opinion that project does not fall under the scope of 29 CFR 1926.65 (Hazardous Waste Operations and Emergency Response).

See **Section 4.0** for a description of the PPE that should be used for this Site.



Chemicals	REL/PEL/STEL (ppm)	Health Hazards
Arsenic	PEL = 0.010 mg /m ³ TWA REL = 0.002 mg /m ³	irritation skin, possible dermatitis; resp distress; diarrhea; kidney damage; muscle tremor, convulsions; possible gastrointestinal tract, reproductive effects; possible liver damage
Lead	PEL = 0.05 mg/m ³ REL = 0.05 mg/m ³	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension.
DDT (pesticides)	PEL = TWA 1 mg/m ³ REL = TWA 0.5 mg/m ³	irritation eyes, skin; paresthesia tongue, lips, face; tremor; anxiety, dizziness, confusion, malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion); convulsions; paresis hands; vomiting; [potential occupational carcinogen]
Dieldrin (pesticide)	PEL = TWA 0.25 mg/m ³ REL = TWA 0.25 mg/m ³	headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; tonic convulsions; coma; In Animals: liver, kidney damage [potential occupational carcinogen]
Heptachlor (pesticide)	PEL = TWA 0.5 mg/m ³ REL = TWA 0.5 mg/m ³	tremor, convulsions; liver damage; [potential occupational carcinogen]

2.3 METALS

Metals including arsenic and lead were detected in concentrations exceeding NYSDEC Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs) and Residential Use (Track 2) SCOs. Overexposure to metal compounds has been associated with a variety of local and systemic health hazards, both acute and chronic in nature, including lung damage, neurological effects, gastrointestinal effects, kidney and liver damage, allergic dermatitis and other skin disorders. Exposure to metals is most commonly through inhalation and ingestion of dust. The Job Hazard Analyses for this project indicates that Personal Protective Equipment (PPE) and engineering controls will maintain work zone conditions to a level

2.4 PESTICIDES

Pesticides such as DDT, heptachlor, and dieldrin were detected at concentrations exceeding Track 2 SCOs in soil samples collected. Pesticide use is historically attributed to the maintenance of the Country Club greens. Occupational exposure to pesticides often occurs for agricultural workers. Overexposure can lead to headache, dizziness; nausea, vomiting, malaise (vague feeling of discomfort), sweating; myoclonic limb jerks; tonic convulsions. Exposure to pesticides are often through ingestion of contaminated food and drinking water.



3.0 AIR MONITORING

Air monitoring falls into two separate categories: direct reading/environmental monitoring, and personal exposure monitoring. The following Sections summarize the types of environmental monitoring as well as the appropriate response actions applicable to the Site.

3.1 TOTAL PARTICULATES

Due to the presence of metals in soils on-Site, total respirable particulates may be a concern. Dust levels should be visually monitored and if levels become noticeable, soils should be wetted down to control dusty conditions. Wetting may be accomplished using various methods, including a hose connected to a fire hydrant or other on-Site source of water. The Contractor's Project Superintendent shall be responsible for determining when the wetting of soils is needed and the most appropriate method to use. In addition, recommended measurements for particulate monitoring are detailed below.

Upwind concentrations should be measured at the start of each work day during active handling of excavated materials (including stockpiling and truck loading) and periodically thereafter to establish background conditions. The particulate air monitoring work will be conducted using a pDR-1200 personal airborne particulate monitor (or approved equivalent) calibrated daily. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers (μm) in size (PM-10) and capable of integrating over a period of 5-minutes or less for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate an exceedance of the action level.

Dust migration will be visually assessed during all work activities, and at no time will the downwind perimeter particulate levels be allowed to exceed a total standard of $10 \text{ mg}/\text{m}^3$ (or "nuisance" dust levels).

If the downwind PM-10 particulate level is $100 \text{ micrograms per cubic meter } (\text{ug}/\text{m}^3)$ greater than the background (upwind perimeter) for a 5-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques (e.g., soil wetting) provided the downwind PM-10 particulate levels do not exceed $150 \text{ ug}/\text{m}^3$ above the upwind level and no visible dust is migrating from the work area.

If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ ug}/\text{m}^3$ above the upwind level, work must be stopped, and a re-evaluation of activities initiated. Work can resume if dust suppression measures and other controls are



successful in reducing the downwind PM-10 particulate concentrations to within 150 ug/m³ of the upwind level and in preventing visible dust migration.

3.2 PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Parameter	Monitoring Instrument	Response Levels above background levels)	Action	Conditions for Continuing Work Activities
Particulates < 10 um (PM-10)	Dust Meter	Fugitive dust migration	1. Implement dust suppression techniques	Dust suppression techniques are in place
		> 100 ug/m ³ but < 150 ug/m ³	1. Implement dust suppression techniques	Levels must not exceed 150 ug/m ³ with dust suppression techniques in place
		> 150 ug/m ³	1. Halt activity 2. Re-evaluate activities	Levels decrease below 150 ug/m ³ and fugitive dust migration is prevented

3.3 CONTINGENCY ORGANIC VAPOR MONITORING

If during construction, the Contractor encounters odors or staining that include the potential for volatile organic vapor hazards. Then the Environmental Consultant will be contacted to evaluate the potentially impacted materials. While the soils are being evaluated, the Contractor may continue to work in an unimpacted area if they include real-time, organic vapor monitoring with a photoionization detector (PID). Monitoring for VOCs will be conducted prior to the start of ground intrusive activities, to establish the Site background VOC concentration levels. The background concentration will then be incorporated and considered when evaluating VOC concentrations at the Site. Vapor monitoring will also be performed during the first three days of ground intrusive activity and compared to the background concentrations to determine if additional monitoring is warranted.

Breathing Zone Readings Action Levels are included below.



Response Levels (above background levels)	Action
0 to 10 ppm	Remain in Level D personal protection. Use colorimetric tubes or other chemical specific device to verify PID readings do not contain low PEL toxic materials (Benzene, Vinyl Chloride, etc.) where applicable. If benzene is present above 1 ppm withdraw from excavation and proceed to level C.
10 to 25 ppm	Withdraw from work area and contact Project Management. Proceed to Level C protection for re-entry, or discontinue operation
> 25 ppm	Secure operations withdraw from work area and discontinue work at that location until contaminants can be evaluated, and detailed plan implemented.

4.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) will be donned as described below for the activities covered by this CHASP. Based on available analytical data and the proposed intrusive activities, the Contractor, anticipates that all activities will require Level D or Modified Level D PPE.

4.1 GENERAL SITE WORK

General Site work conducted outside the excavation areas, operators of heavy equipment, and non-intrusive activities which do not generate dust will require Level D protective equipment. Level D is defined as:

- Hardhat
- Eye protection
- Hearing protection (with site workers at all times and donned when appropriate)
- Steel-toed work boots
- Work clothes

Workers shall wear appropriate hearing protection during designated hearing protection-required tasks (such as, jack hammering, pile driving etc.). To reduce the exposure to noise, personnel working in areas of excessive noise must use hearing protectors (earplugs or earmuffs).

Rule-of-Thumb: Wherever actual data from sound level meters or noise dosimeters is unavailable, if it is necessary to raise one's voice above a normal conversational level to communicate with others within 3 to 5 feet away, hearing protection should be worn.



4.2 EXCAVATION AREAS AND OTHER SOIL HANDLING

Personnel working in the areas of active excavation, but not operating heavy equipment, and any other personnel potentially contacting contaminated materials will be required to wear Modified Level D PPE. Modified Level D is defined as:

- Hardhat
- Eye protection
- Hearing protection (as warranted see above)
- Steel-toed work boots
- Tyvek Coveralls
- Disposable nitrile chemically resistant gloves

Level C PPE and Level B are not expected to be required.

5.0 **SITE CONTROL**

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas along with personal protective equipment requirements will be clearly identified with signage. Pedestrian traffic will be managed to the extent possible by the Contractor's Traffic and Pedestrian Control Plan.

The Contractor will designate a work zone and support zone as defined below.

5.1 WORK ZONE

Work zones on Site will be temporary or dynamic, encompassing the work area(s) actively being worked in on that particular day(s). Site personnel will be advised of the current work area(s) as part of site safety meetings. The Contractor will have a hydrant permit or other water source available to wet down exposed soils to control dust.

5.2 SUPPORT ZONE

The support zone will consist of an area outside the areas of active excavation and soil handling, where equipment and support vehicles will be located. Eating, drinking and smoking will be permitted only in this area. Sanitary facilities will be located on Site. In addition, potable water and water and soap for hand washing will be available at the Site.



5.3 OTHER SITE CONTROL AND SAFETY MEASURES

The following measures are designed to augment the specific health and safety guidelines provided in this plan. These issues will form the basis of the Site orientation and daily safety meetings discussed in **Section 7.0**, below.

- The Site hazards will be evaluated by the Contractor's Project Superintendent using the Site Safety Checklist.
- No one is to perform field work alone. Team members must be intimately familiar with the procedures for initiating an emergency response.
- Avoidance of contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk around (not through) puddles and dis-colored surfaces. Do not kneel on the ground or set equipment on the ground.
- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited except in the support zone after proper decontamination as defined in **Section 6.0**.
- The use of alcohol or drugs is prohibited during the conduct of field operations.
- Safety equipment (PPE) will be required for all field personnel unless otherwise approved by the subcontractor's health and safety representatives and/or the Project Superintendent.

5.4 SITE SECURITY

The Site shall be unoccupied during Site work except for Contractor personnel and subcontractors. If possible, access to the work areas during field work will be limited by closing site gates to reduce unauthorized pedestrian traffic. The Client's Project Superintendent is responsible for identifying the presence of all employees on Site.

Equipment left on Site during off hours must be locked, immobilized and/or otherwise secured to prevent theft or unauthorized use or access. The Contractor and subcontractors' employees will not be permitted on Site during off-hours without specific client approval.

6.0 **DECONTAMINATION**

Proper decontamination will be performed for personnel and equipment before leaving the Site. All solid waste generated during decontamination will be bagged by the Contractor personnel and stored on Site for disposal. Water will be disposed of by on-Site infiltration into soil within an exclusion zone.



6.1 PERSONAL DECONTAMINATION

Personal decontamination will be accomplished by following a systematic procedure of cleaning and removal of personal protective equipment (PPE). The Contractor will supply decontamination equipment to allow PPE to be brushed to remove gross contamination and then scrubbed clean in a detergent solution and then rinsed clean. To facilitate this, a three-basin wash system will be set up on site by the Contractor.

Disposable PPE, such as Tyvek coveralls, gloves, and hearing protection, etc. will be placed in trash bags in an on-Site container pending a disposal. Alternative chemical decontamination procedures, such as steam-cleaning reusable rubber outer boots, may be used if necessary.

Steps required in a decontamination sequence will depend on the level of protection worn in accordance with **Section 4.0**:

1. Remove and wipe clean hard hat
2. Brush boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Remove boot covers (if in use)
5. Rinse boots and gloves
6. Dry non-disposable equipment with paper towels
7. Remove Tyvek coveralls
8. Remove eye protection
9. Remove chemically resistant gloves

6.2 EQUIPMENT DECONTAMINATION

Hand tools and portable equipment will be decontaminated upon leaving the active excavation areas using the same procedures for personal decontamination. Wooden tools are difficult to decontaminate because they absorb chemicals. Wooden hand tools will be kept on Site for the project duration and handled only by protected workers. At the end of the Site activities, wooden tools will be discarded if they cannot be decontaminated properly.

Large Equipment will be decontaminated in an area near the entrance to the Site. Decontamination of large equipment will mitigate the risk of spreading potentially-contaminated soil off-Site. The Contractor will use a combination of long-handled brushes, rods and shovels for general exterior cleaning and dislodging contaminated soil caught in tires and the undersides of vehicles and equipment.

Prior to leaving the Site, large equipment will be inspected to assure that excess material has not adhered to the equipment. If needed, the Contractor will clean the large equipment, including



washing tires and undercarriages with a hose to remove excess adhered soil prior to leaving the Site.

Exposed excavated material will be covered on each truck after loading. The cover will be secured and remain in place until the container has reached the disposal facility.

7.0 MEDICAL MONITORING AND TRAINING REQUIREMENTS

Training records for Site personnel and subcontractors shall be provided to the Contractor prior to on-Site work and will be maintained on Site.

7.1 MEDICAL MONITORING

Only those workers excavating the hazardous lead areas are anticipated to need respiratory protection. At other excavation areas and for general Site work, it is anticipated that respiratory protection is not required by the levels of soil contamination. Therefore, only the workers excavating the hazardous lead areas will require medical monitoring requirements on this project.

7.2 TRAINING

All personnel covered by this CHASP must have completed the appropriate training requirements specified in 29 CFR 1910.1200 Hazard Communication and 29 CFR 1926. Workers will need to undergo the following training:

Project Role	Training / Certification Required
Project Superintendent	OSHA 30-Hour Construction Safety and Health Course OSHA 10-Hour Construction Safety and Health Course OSHA 40-Hour HAZWOPER Training OSHA 8-hour HAZWOPER Supervisor
Site Safety Coordinator / Site Safety Manager	OSHA 30-Hour Construction Safety and Health Course OSHA 10-Hour Construction Safety and Health Course OSHA 40-Hour HAZWOPER Training OSHA 8-hour HAZWOPER Supervisor
Construction Workers	OSHA 10-Hour Construction Safety and Health Course

Also, at least one Contractor employee must be on Site during all activities to act as the Site Foreman and will be responsible for identifying existing and predictable hazards in surroundings or working conditions that are unsanitary, hazardous, or dangerous to Site workers and or the community, and will have the authorization to take prompt corrective measures to eliminate them. This individual must have



documentation of at least three days of supervised field experience as well as completion of the specified 8-hour training course for managers and supervisors. Records of certifications and training should be kept by the Contractor.

All project personnel and subcontractor personnel will be trained on relevant safety topics through a combination of Site orientation, presentations to staff, and toolbox talks. Training will include site-specific environmental requirements.

All construction personnel upon entering the Site must attend a brief training meeting, its purpose being to:

- Make workers aware of the potential hazards they may encounter;
- Instruct workers on how to identify potential hazards,
- Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- Make workers aware of the purpose and limitations of safety equipment; and
- Ensure that they can safely avoid or escape from emergencies.

Each member of the construction crew will be instructed in these objectives before he/she goes onto the Site. Construction personnel will be responsible for identifying potential hazards that may be encountered during the performance of work. The SSM or other suitably trained individual will be responsible for conducting the training program. A suitably trained construction worker must accompany visitors/others who enter the Site.

In addition, those workers that will perform work below the demarcation layer or come in contact with soil from below the demarcation layer while intrusive activities are being performed, must recognize and understand the potential hazards to health and safety. Training records for Site personnel and subcontractors will be obtained prior to on-site work and will be maintained on site. Records of certifications and training should be kept by the SSM

7.3 SUBCONTRACTORS

Subcontractors will be required to provide to the Contractor's Project Superintendent specific written documentation that each individual assigned to this project has completed the medical monitoring and training requirements specified above. This information must be provided prior to their performing any work on site.

7.4 SITE SAFETY MEETINGS

Prior to the commencement of on-Site investigative activities, a Site safety meeting will be held to review the specific requirements of this CHASP. Sign-off sheets will be collected at this



meeting (see **Attachment A**). Short safety refresher meetings will be conducted daily or as conditions or work activates change. In addition, the Project Superintendent will document that Site visitors have had the required training in accordance with 29 CFR 1910.120 and will provide documented pre-entry safety briefings.

7.5 REASSESSMENT OF PROTECTION PROGRAM

The level of protection provided by the PPE selection will be either upgraded or downgraded based upon a change in Site conditions. When a change occurs, the hazards will be reassessed by the Contractor Project Superintendent. Some indicators of the need for reassessment include:

- A change in job tasks during a work phase;
- A change of season/weather;
- When the temperature extremes or individual medical considerations limit the effectiveness of PPE; and
- Contaminants other than those previously identified are encountered or suspected.

8.0 **EMERGENCY ACTION PLAN**

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." The Contractor personnel covered by this CHASP may not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). The Contractor response actions will be limited to evacuation and medical/first aid as described within this Section, below.

The basic elements of an emergency evacuation plan include employee training, alarm systems, escape routes, escape procedures, critical operations or equipment, rescue and medical duty assignments, designation of responsible parties, emergency reporting procedures, and methods to account for all employees after evacuation.

8.1 EMPLOYEE INFORMATION

General training regarding emergency evacuation procedures are included in the Contractor initial and refresher training courses. Also, as described, employees must be instructed in the specific aspects of emergency evacuation applicable to the Site as part of the site safety meeting prior to the commencement of all on-site activities. On-Site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are



changed. This information will be provided during the Site safety meetings (see Section 7.4) and will be documented by the Contractor.

8.2 EMERGENCY SIGNAL AND ALARM SYSTEMS

An emergency communication system must be in effect at all times. The most simple and effective emergency communication system in many situations will be direct verbal communications. The site must be assessed at the time of initial Site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices cannot be clearly perceived above ambient noise levels (i.e., noise from heavy equipment, trucks, etc.) and anytime a clear line-of-sight cannot be easily maintained amongst all personnel because of distance, terrain or other obstructions. The Contractor will maintain an air horn (or whistle) on-Site that will be used to signal an emergency so that it can be heard over other construction noises on-Site.

8.3 EMERGENCY CONTACTS

Police: 911
Fire: 911
Ambulance: 911
Montefiore New Rochelle Hospital: (914) 365-3770

8.4 HOSPITAL LOCATION

Montefiore New Rochelle Hospital is located at 16 Guion Place, New Rochelle, New York. The most direct route to the hospital from the Site is through NY125 N, then south onto I-95S, take exit 16 to Glover Johnson Place, and arrive at the hospital. **Attachment B** presents a hospital route map.

8.5 INCIDENT REPORTING PROCEDURES

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation should be initiated as soon as emergency conditions are under control. The purpose of this investigation is not to attribute blame but to determine the pertinent facts, so that repeat or similar occurrences can be avoided.

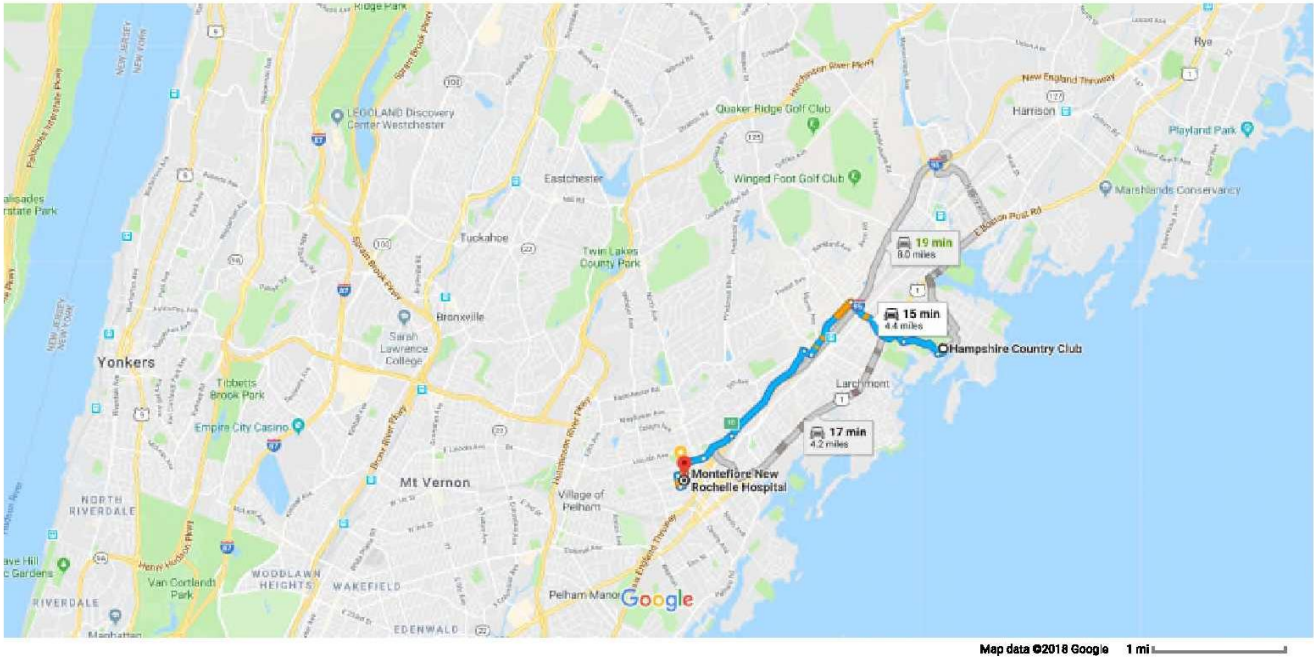
The investigation should begin while details are still fresh in the mind of anyone involved. The person administering first aid may be able to start the fact gathering process if the injured can speak. Pertinent facts must be determined. Questions beginning with who, what, when, where, and how are usually most effective to discover ways to improve job performance in terms of efficiency and quality of work, as well as safety and health concerns.



ATTACHMENT A
HEALTH AND SAFETY BRIEFING



**ATTACHMENT B
ROUTE TO HOSPITAL**



Hampshire Country Club

1025 Cove Rd, Mamaroneck, NY 10543

Take Eagle Knolls Rd and Hommocks Rd to NY-125 N

- | | |
|--|----------------|
| ↑ 1. Head southeast on Cove Rd | 4 min (0.8 mi) |
| ↘ 2. Turn right to stay on Cove Rd | 49 ft |
| ↑ 3. Cove Rd turns right and becomes Eagle Knolls Rd | 486 ft |
| ↘ 4. Slight right onto Hommocks Rd | 0.5 mi |
| | 0.3 mi |

Continue on NY-125 N. Take Myrtle Blvd, I-95 S and Exit 16 to Glover Johnson Pl in New Rochelle

- | | |
|---|----------------|
| ↑ 5. Continue onto NY-125 N | 9 min (3.4 mi) |
| ↙ 6. Turn left onto Myrtle Blvd | 0.5 mi |
| ↑ 7. Myrtle Blvd turns slightly right and becomes Madison Ave | 0.7 mi |
| ↙ 8. Turn left to merge onto I-95 S | 489 ft |
| ↘ 9. Take exit 16 toward North Ave/Cedar St/New Rochelle | 1.2 mi |
| ↑ 10. Continue onto Memorial Hwy | 0.4 mi |
| ↑ 11. Continue onto Norman Rockwell Blvd | 0.1 mi |
| ⦿ 12. At the traffic circle, take the 2nd exit and stay on Norman Rockwell Blvd | 315 ft |
| ↘ 13. Turn right onto Lockwood Ave | 0.2 mi |
| | 433 ft |

Continue on Glover Johnson Pl to your destination

2 min (0.2 mi)



8/17/2018

Hampshire Country Club to Montefiore New Rochelle Hospital - Google Maps

-  14. Turn left onto Glycer Johnson Pl 0.1 mi
-  15. Turn left 177 ft
-  16. Turn left

 Destination will be on the left
- 230 ft

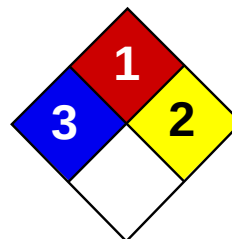
Montefiore New Rochelle Hospital

16 Guion Pl, New Rochelle, NY 10802

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.



ATTACHMENT C
SAFETY DATA SHEETS



Health	3
Fire	1
Reactivity	2
Personal Protection	E

Material Safety Data Sheet

Arsenic MSDS

Section 1: Chemical Product and Company Identification

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Arsenic	7440-38-2	100

Toxicological Data on Ingredients: Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat, of oxidizing materials.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards:

Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:

Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: Not available.

Melting Point: Sublimation temperature: 615°C (1139°F)

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water, hot water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): 145 mg/kg [Mouse].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs: kidneys, lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:

Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:**WHMIS (Canada):**

CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):

R22- Harmful if swallowed. R45- May cause cancer.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1

Reactivity: 2

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information**References:**

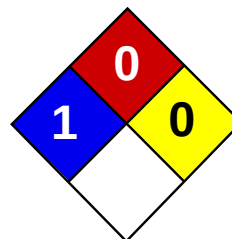
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérigènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986.

Other Special Considerations: Not available.

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Health	1
Fire	0
Reactivity	0
Personal Protection	E

Material Safety Data Sheet

Lead MSDS

Section 1: Chemical Product and Company Identification

Product Name: Lead

Catalog Codes: SLL1291, SLL1669, SLL1081, SLL1459, SLL1834

CAS#: 7439-92-1

RTECS: OF7525000

TSCA: TSCA 8(b) inventory: Lead

CI#: Not available.

Synonym: Lead Metal, granular; Lead Metal, foil; Lead Metal, sheet; Lead Metal, shot

Chemical Name: Lead

Chemical Formula: Pb

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Lead	7439-92-1	100

Toxicological Data on Ingredients: Lead LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:

Slightly hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Non-flammable in presence of open flames and sparks, of shocks, of heat.

Explosion Hazards in Presence of Various Substances:

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: When heated to decomposition it emits highly toxic fumes of lead.

Special Remarks on Explosion Hazards: Not available.

Section 6: Accidental Release Measures

Small Spill:

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 0.05 (mg/m³) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m³) from OSHA (PEL) [United States] TWA: 0.03 (mg/m³) from NIOSH [United States] TWA: 0.05 (mg/m³) [Canada] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 207.21 g/mole

Color: Bluish-white. Silvery. Gray

pH (1% soln/water): Not applicable.

Boiling Point: 1740°C (3164°F)

Melting Point: 327.43°C (621.4°F)

Critical Temperature: Not available.

Specific Gravity: 11.3 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility: Insoluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, excess heat

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Can react vigorously with oxidizing materials. Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation. Ingestion.

Toxicity to Animals:

LD50: Not available. LC50: Not available.

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans:

Acute Potential: Skin: Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation Eyes: Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation. Inhalation: In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungs by mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually absorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, delirium, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause "fume metal fever", which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion: Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead colic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information**Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead Connecticut hazardous material survey.: Lead Illinois toxic substances disclosure to employee act: Lead Illinois chemical safety act: Lead New York release reporting list: Lead Rhode Island RTK hazardous substances: Lead Pennsylvania RTK: Lead

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):

R20/22- Harmful by inhalation and if swallowed. R33- Danger of cumulative effects. R61- May cause harm to the unborn child. R62- Possible risk of impaired fertility. S36/37- Wear suitable protective clothing and gloves. S44- If you feel unwell, seek medical advice (show the label when possible). S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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Last Updated: 05/21/2013 12:00 PM

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Safety Data Sheet

Revision Date: 12/23/16

www.restek.com

1. IDENTIFICATION

Catalog Number / Product Name:	32203 / 4,4'-DDT Standard
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	8
Intended use:	For Laboratory use only

2. HAZARD(S) IDENTIFICATION

Emergency Overview:

GHS Hazard
Symbols:



GHS Classification: Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1
Flammable Liquid Category 2
Acute Toxicity - Inhalation Dust / Mist Category 3
Acute Toxicity - Dermal Category 3
Acute Toxicity - Oral Category 3

GHS Signal Word: Danger

GHS Hazard: Highly flammable liquid and vapour.
Toxic if swallowed, in contact with skin or if inhaled.
Causes damage to organs.

GHS Precautions:

Safety Precautions: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilation and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wash hands and skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Measures: IF SWALLOWED: Immediately call a POISON CENTER/doctor/....
IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF exposed: Call a POISON CENTER or doctor/physician.
Call a POISON CENTER or doctor/physician.
Call a POISON CENTER or doctor/physician if you feel unwell.
Specific treatment see section 4.
Rinse mouth.
Take off immediately all contaminated clothing and wash it before reuse.
In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: No data available.

Repeated Exposure Target Organs: No data available.

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
methanol	67-56-1	200-659-6	99.900000
4,4'-DDT	50-29-3	200-024-3	0.100000

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately.

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used to extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire.

Fire and/or Explosion Hazards: Vapors may be ignited by sparks, flames or other sources of ignition if material is above the flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA
4,4'-DDT	50-29-3	500 mg/m3 IDLH		1 mg/m3 TWA	1 mg/m3 TWA (listed under Dichlorodiphenyltrichloroethane)

Personal Protection:

Engineering Measures:

Local exhaust ventilation is recommended when generating excessive levels of vapors from handling or thermal processing.

Respiratory Protection:

Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms. If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection.

Eye Protection:

Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.

Skin Protection:

Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	No data available.
Odor:	Mild
Physical State:	No data available.
pH:	No data available.
Vapor Pressure:	No data available.
Vapor Density:	1.1 (air = 1)
Boiling Point:	No data available.
Melting Point:	-98 °C
Flash Point:	52
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	36
Lower Flammable/Explosive Limit, % in air:	6
Autoignition Temperature:	464 deg C
Decomposition Temperature:	No data available.
Specific Gravity:	0.791 - 0.792 g/cm3 at 20 °C
Evaporation Rate:	No data available.
Odor Threshold:	No data available.
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available.
VOC % by weight:	99.9
Molecular Weight:	32.04

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	No data available.
Materials to Avoid / Chemical Incompatibility:	Strong oxidizing agents
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, Skin Contact, Eye Contact, Ingestion
Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Skin, GI Tract, Respiratory Tract
Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity: Harmful! Can cause systemic damage (see "Target Organs")Methanol can cause central nervous system depression and overexposure can cause damage to the optic nerve resulting in visual impairment or blindness.
Skin Contact: Can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.
Eye Contact: Can cause moderate irritation, tearing and reddening, but not likely to permanently injure eye tissue.
Ingestion Irritation: Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.Highly toxic and may be fatal if swallowed.
Ingestion Toxicity: Toxic if swallowed. May cause target organ failure and/or death.May be fatal if swallowed.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity: Contains a known human reproductive and/or developmental hazard.
Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs")
Skin Contact: Upon prolonged or repeated contact, can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.
Ingestion: Toxic if swallowed. May cause target organ failure and/or death.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methanol	67-56-1	Inhalation LC50 Rat 22500 ppm 8 h
DDT	50-29-3	Dermal LD50 Rabbit 300 - 2820 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
DDT	50-29-3	Present

ACGIH:

Chemical Name	CAS No.	
DDT	50-29-3	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
DDT	50-29-3	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available.	

IARC:

Chemical Name	CAS No.	Group No.
No data.		Group 1
DDT	50-29-3	Group 2A
No data.		Group 2B

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous

Mobility: to plants and/or wildlife.
Persistence: No data
Bioaccumulation: No data
Degradability: Biodegrades slowly.
Ecological Toxicity Data: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.
Disposal Methods: Dispose of by incineration following Federal, State, Local, or Provincial regulations.
Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Methanol
UN Number: UN1230
Hazard Class: 3
Packing Group: II

International:
IATA Proper Shipping Name: Methanol
UN Number: UN1230
Hazard Class: 3(6.1)
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available.			

15. REGULATORY INFORMATION

United States:					
Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
methanol	67-56-1	X	X	-	X
4,4'-DDT	50-29-3	X	-	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
DDT	50-29-3	Prop 65 Cancer
Methanol	67-56-1	Prop 65 Develop Tox
p,p'-DDT	50-29-3	Prop 65 Develop Tox
p,p'-DDT	50-29-3	Prop 65 Rep Female
p,p'-DDT	50-29-3	Prop 65 Rep Male

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
methanol	67-56-1	X	X	X	X
4,4'-DDT	50-29-3	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 09/30/14
Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References: No data available.
Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose

prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.



Safety Data Sheet

Revision Date: 12/23/16

www.restek.com

1. IDENTIFICATION

Catalog Number / Product Name:	32218 / Dieldrin Standard
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	6
Intended use:	For Laboratory use only

2. HAZARD(S) IDENTIFICATION

Emergency Overview:

GHS Hazard
Symbols:



GHS Classification: Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1
Flammable Liquid Category 2
Acute Toxicity - Inhalation Dust / Mist Category 3
Acute Toxicity - Dermal Category 3
Acute Toxicity - Oral Category 3

GHS Signal Word: Danger

GHS Hazard: Highly flammable liquid and vapour.
Toxic if swallowed, in contact with skin or if inhaled.
Causes damage to organs.

GHS Precautions:

Safety Precautions: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilation and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wash hands and skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Measures: IF SWALLOWED: Immediately call a POISON CENTER/doctor/....
IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF exposed: Call a POISON CENTER or doctor/physician.
Call a POISON CENTER or doctor/physician.
Call a POISON CENTER or doctor/physician if you feel unwell.
Specific treatment see section 4.
Rinse mouth.
Take off immediately all contaminated clothing and wash it before reuse.
In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: No data available.

Repeated Exposure Target Organs: No data available.

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
methanol	67-56-1	200-659-6	99.900000
dieldrin	60-57-1	200-484-5	0.100000

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately.

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used to extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire.

Fire and/or Explosion Hazards: Vapors may be ignited by sparks, flames or other sources of ignition if material is above the flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA
dieldrin	60-57-1	ND		0.1 mg/m3 TWA (inhalable fraction and vapor)	0.25 mg/m3 TWA

Personal Protection:

Engineering Measures:	Local exhaust ventilation is recommended when generating excessive levels of vapors from handling or thermal processing.
Respiratory Protection:	Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms. If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.
Skin Protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	No data available.
Odor:	Mild
Physical State:	No data available.
pH:	No data available.
Vapor Pressure:	No data available.
Vapor Density:	1.1 (air = 1)
Boiling Point:	No data available.
Melting Point:	-98 °C
Flash Point:	52
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	36
Lower Flammable/Explosive Limit, % in air:	6
Autoignition Temperature:	464 deg C
Decomposition Temperature:	No data available.
Specific Gravity:	0.791 - 0.792 g/cm3 at 20 °C
Evaporation Rate:	No data available.
Odor Threshold:	No data available.
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available.
VOC % by weight:	99.9
Molecular Weight:	32.04

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	No data available.
Materials to Avoid / Chemical Incompatibility:	Strong oxidizing agents
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion
-------------------------	--

Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Skin, GI Tract, Respiratory Tract

Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.

Inhalation Toxicity: Harmful! Can cause systemic damage (see "Target Organs")Methanol can cause central nervous system depression and overexposure can cause damage to the optic nerve resulting in visual impairment or blindness.

Skin Contact: Can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.

Eye Contact: Can cause moderate irritation, tearing and reddening, but not likely to permanently injure eye tissue.

Ingestion Irritation: Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.Highly toxic and may be fatal if swallowed.

Ingestion Toxicity: Toxic if swallowed. May cause target organ failure and/or death.May be fatal if swallowed.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: Contains a known human reproductive and/or developmental hazard.

Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)

Skin Contact: Upon prolonged or repeated contact, can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.

Ingestion: Toxic if swallowed. May cause target organ failure and/or death.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methanol	67-56-1	Inhalation LC50 Rat 22500 ppm 8 h

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.
No data available.	

ACGIH:

Chemical Name	CAS No.
No data available.	

NIOSH:

Chemical Name	CAS No.
No data available.	

NTP:

Chemical Name	CAS No.
No data available.	

IARC:

Chemical Name	CAS No.	Group No.
No data.		Group 1
No data.		Group 2A
No data.		Group 2B

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife.

Mobility: No data

Persistence: No data

Bioaccumulation: No data
Degradability: Biodegrades slowly.
Ecological Toxicity Data: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.
Disposal Methods: Dispose of by incineration following Federal, State, Local, or Provincial regulations.
Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Methanol
UN Number: UN1230
Hazard Class: 3
Packing Group: II

International:
IATA Proper Shipping Name: Methanol
UN Number: UN1230
Hazard Class: 3(6.1)
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available.			

15. REGULATORY INFORMATION

United States:					
Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
methanol	67-56-1	X	X	-	X
dieldrin	60-57-1	X	-	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Dieldrin	60-57-1	Prop 65 Cancer
Methanol	67-56-1	Prop 65 Develop Tox

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
methanol	67-56-1	X	X	X	X
dieldrin	60-57-1	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 04/28/14
Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References: No data available.
Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given

and accepted at your risk.



Safety Data Sheet

Revision Date: 01/17/18

www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name: 32228 / Heptachlor Standard
Company: Restek Corporation
Address: 110 Benner Circle
Bellefonte, Pa. 16823
Phone#: 814-353-1300
Fax#: 814-353-1309
Emergency#: 800-424-9300 (CHEMTREC)
703-527-3887 (Outside the US)
Email: www.restek.com
Revision Number: 8
Intended use: For Laboratory use only

2. HAZARD(S) IDENTIFICATION

Emergency Overview:

GHS Hazard
Symbols:



GHS Classification: Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1
Flammable Liquid Category 2
Carcinogenicity Category 2
Acute Toxicity - Dermal Category 3
Acute Toxicity - Oral Category 3

GHS Signal Word: Danger

GHS Hazard: Highly flammable liquid and vapour.
Toxic if swallowed or in contact with skin.
Suspected of causing cancer.
Causes damage to organs.

GHS Precautions:

Safety Precautions: Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilation and lighting equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/fume/gas/mist/vapours/spray.
Wash hands and skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.

First Aid Measures: IF SWALLOWED: Immediately call a POISON CENTER/doctor/....
IF ON SKIN: Wash with plenty of soap and water.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF exposed: Call a POISON CENTER or doctor/physician.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER or doctor/physician if you feel unwell.
Specific treatment see section 4.

Rinse mouth.
Take off immediately all contaminated clothing and wash it before reuse.
In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 1: H370 Causes damage to organs. (C $\geq$ 10 %; No information to prove exclusion of certain routes of exposure); Specific target organ toxicity - Single exposure - STOT SE 2: H371 May cause damage to organs. (3 % $\leq$ C $<$ 10 %; Concentration limits for acute toxicity cannot be translated into GHS from the DSD especially when minimum classifications are given)

Repeated Exposure Target Organs: Specific target organ toxicity - Repeated exposure - STOT RE 2: H373 May cause damage to organs through prolonged or repeated exposure. (Minimum classification, No information to prove exclusion of certain routes of exposure)

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
methanol	67-56-1	200-659-6	99.9
heptachlor	76-44-8	200-962-3	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used to extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire.

Fire and/or Explosion Hazards: Vapors may be ignited by sparks, flames or other sources of ignition if material is above the flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a

minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
methanol	67-56-1	6000 ppm IDLH	250 ppm STEL	200 ppm TWA	200 ppm TWA; 260 mg/m3 TWA
heptachlor	76-44-8	35 mg/m3 IDLH	None Known	0.05 mg/m3 TWA	0.5 mg/m3 TWA

Personal Protection:

Engineering Measures:

Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.

Respiratory Protection:

Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms. If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection.

Eye Protection:

Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.

Skin Protection:

Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	No data available
Odor:	Mild
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	1.1 (air = 1)
Boiling Point (°C):	64.7 °C at 760 mmHg (HSDB)
Melting Point (°C):	-98 °C
Flash Point (°F):	52
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	36
Lower Flammable/Explosive Limit, % in air:	6
Autoignition Temperature (°C):	464 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.791 - 0.792 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	No data available
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	0
Molecular Weight:	32.04

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatibility:	Strong oxidizing agents
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion
Target Organs Potentially Affected By Exposure:	Eyes, Central nervous system stimulation, Skin, GI Tract, Respiratory Tract
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs")Methanol can cause central nervous system depression and overexposure can cause damage to the optic nerve resulting in visual impairment or blindness.
Skin Contact:	Can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.
Eye Contact:	Can cause moderate irritation, tearing and reddening, but not likely to permanently injure eye tissue.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.Highly toxic and may be fatal if swallowed.
Ingestion Toxicity:	Toxic if swallowed. May cause target organ failure and/or death.May be fatal if swallowed.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components present at greater than 0.1% may cause birth defects.
Inhalation:	Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs")
Skin Contact:	Upon prolonged or repeated contact, can cause moderate skin irritation, defatting, and dermatitis. Not likely to cause permanent damage.
Ingestion:	Toxic if swallowed. May cause target organ failure and/or death.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Heptachlor	76-44-8	Dermal LD50 Rabbit 780 mg/kg
Methanol	67-56-1	Inhalation LC50 Rat 22500 ppm 8 h

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Heptachlor	76-44-8	Present

ACGIH:

Chemical Name	CAS No.	
Heptachlor	76-44-8	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Heptachlor	76-44-8	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 79 [2001]; Monograph 53 [1991]; Supplement 7 [1987]	76-44-8	Group 2B

12. ECOLOGICAL INFORMATION

Overview:	Moderate ecological hazard. This product may be dangerous to plants and/or wildlife.
Mobility:	No data
Persistence:	No data
Bioaccumulation:	No data
Degradability:	Biodegrades slowly.
Ecological Toxicity Data:	No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product:	Spent or discarded material is a hazardous waste. Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.
Disposal Methods:	Dispose of by incineration following Federal, State, Local, or Provincial regulations.
Waste Disposal of Packaging:	Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:	
DOT Proper Shipping Name:	Methanol
UN Number:	UN1230
Hazard Class:	3
Packing Group:	II

International:	
IATA Proper Shipping Name:	Methanol
UN Number:	UN1230
Hazard Class:	3(6.1)
Packing Group:	II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:					
Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
methanol	67-56-1	X	X	-	X
heptachlor	76-44-8	X	X	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Heptachlor	76-44-8	Prop 65 Cancer
Heptachlor	76-44-8	Prop 65 Develop Tox
Methanol	67-56-1	Prop 65 Develop Tox

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
methanol	67-56-1	X	X	X	X
heptachlor	76-44-8	X	X	X	X

16. OTHER INFORMATION

Prior Version Date:	12/13/16
Other Information:	Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References:	No data available
Disclaimer:	Restek Corporation provides the descriptions, data and information contained

herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.



GZA GeoEnvironmental of New York

Appendix 3 – Material Handling Plan



Proactive by Design

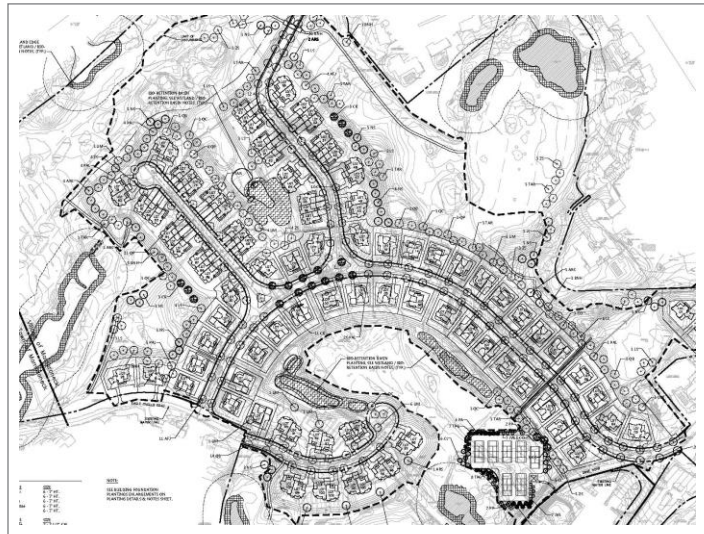


MATERIAL HANDLING PLAN

**Hampshire Country Club
Planned Residential Development
Village of Mamaroneck
Westchester County, New York**

September 2018

File No. 41.0162548.10



PREPARED FOR:

VHB

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1.0 INTRODUCTION

GZA GeoEnvironmental of New York (GZA) prepared this Material Handling Plan (MHP) in coordination with the VHB, for the Planned Residential Development in the Village of Mamaroneck. The Planned Residential Development will redevelop a portion of the Hampshire Country Club located in 1025 Cove Road, Mamaroneck, New York (Site). The MHP was prepared in consideration of applicable federal, state, and local laws, codes, rules, and regulations, including, but not limited to, the United State Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and the New York State Department of Labor (NYSDOL).

1.1 OBJECTIVES

This MHP, supplements the Construction Management Work Plan (CMWP), and presents the procedures to be implemented during the planned construction activities at the Site. The MHP is designed to limit potential impacts to the environment, protected resources, and communities within and adjacent to the project area. The objectives of the MHP are to:

- Identify environmental requirements within the Project that require compliance with Federal, State, and local regulatory permit conditions and the procedures defined to meet them;
- Define responsibilities and actions required to maintain compliance with environmental requirements during the earthwork activities associated with the Project and to effectively respond to problem situations or agency/public concerns;
- Establish procedures for communication, documentation, and review of environmental compliance activities for the project;
- Establish formal procedures for soil handling, transfer and disposal activities; and
- Promote resource recovery efforts by establishing best management practices on soil segregation, storage, and disposal.

This MHP will be updated regularly as earthwork construction progresses and additional information is identified regarding environmental hazards and concerns.

1.2 PROJECT BACKGROUND

The Site is located in the southern portion of the Westchester County in the Village of Mamaroneck and Village of Mamaroneck, New York. The Site is also situated just north of the Long Island Sound. Currently, Site consists of a golf course and a club house. The Site is approximately 94.5 acres (R-20 zone) of which approximate 2.7 acres is impervious. The rest are golf course, overgrown and grass areas.

The approximately 130-acre Site is known as Hampshire Country Club. The country club is identified in the Village of Mamaroneck Section 9, and the following assessor's block and lot numbers:

Block 35: Lot 700,
Block 36: Lot 1



Block 42: Lots 367, 568, 659

Block 43: Lots 1, 12

The proposed planned residential development consists of the construction of 105 units of single-family homes and town homes with associated roadways, utilities, detention ponds, and recreational facilities.

The construction project involves leveling a 55.6-acre area of the Site and creating a development platform by raising the existing grade for the base of the building foundations. To accomplish this, on-site soil will be reused to construct a new roadway and development platform. On-Site excavated material is planned to be reused through a cut and fill program to the extent possible. The on-Site soils will then be covered by a minimum 1-foot layer of certified clean fill that will be purchased and transported to the Site to be used as part of the construction project until the final development platform grades are reached.

2.0 MATERIALS IMPORT AND REUSE PROCEDURES

This section describes the procedures for imported material documentation, collection of representative samples, laboratory analytical testing, soil reuse procedures and demarcation.

2.1 IMPORTED MATERIAL SOURCE DOCUMENTATION

The source of imported material will provide the following documentation prior to transporting certified clean fill to the Site. All imported material will be certified clean fill. The documentation must include the following information.

- i. the name of the person providing the documentation and relationship to the source of the fill;
- ii. the location where the fill was obtained;
- iii. identification of any state or local approvals as a fill source; and
- iv. if no prior approval is available for the source, a brief history of the use of the property which is the source of the fill.

The Contractor shall provide bills of lading to NYSDEC to document that the fill delivered was from a NYSDEC-approved source(s).

Inspection of imported fill material will include visual, olfactory and photoionization detector (PID) screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The Contractor will be responsible to ensure that every truck load of imported material is from the documented source and inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.



2.2 SAMPLING AND ANALYSIS PROCEDURES FOR IMPORTED MATERIAL

Sampling is required for all imported soil for use as backfill or cover material. Materials imported to the Site will comply with the requirements set forth in NYSDEC DER-10 Section 5.4(e)4. Based on the soil quantity and type of constituents, samples will be collected as a combination of discrete and composite samples.

The Laboratory being used for materials testing will send the original test report directly to the Contractor, with copies of the test results sent to the NYSDEC. The Laboratory shall issue the original reports no later than five (5) calendar days after the representative samples are collected. The reports will contain the following: the characteristics of the materials analyzed, the number of samples collected and tested, dates of sampling and testing, laboratory test procedures utilized, the names and signatures of the individuals collecting the samples and conducting the laboratory tests, an interpretation of the test results and chain-of-custody forms.

2.3 TRANSPORTER INFORMATION

A Statement of Qualification for each proposed Transporter who will transport the material must be submitted. Transporters are required to have a 6 NYCRR Part 364 Waste Transporter permit. If the transportation passes through other states, the Transporter shall provide evidence that the transporter complies with the applicable laws, codes, rules, and regulations of the respective states.

Loaded vehicles will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364.

2.4 SOIL REUSE PROCEDURES

In accordance with the NYSDEC Division of Materials Management, the project's cut and fill program meets the conditional exemption under the 6 NYCRR Part 360.13 (C) which states that:

(c) Exemption for on-site reuse of fill material. Fill material used as backfill for the excavation from which the material was taken or as fill in areas of similar physical characteristics on the project property is exempt from regulation under this Part. If fill material exhibits historical or visual evidence of contamination (including odors) and will be used in an area with public access, the relocated fill material must be covered with a minimum of 12 inches of soil or fill material that meets the criteria for general fill, as defined in this Part.

Excavated materials will be reused in areas containing similar characteristics, at locations where the material characteristics meet the engineering criteria for that use, and at locations that are considered acceptable. In a letter dated August 7, 2018 the NYSDEC indicated that the reused soils for this project meet the conditions of the exemption and are not regulated by 6 NYCRR Part 360 as Solid Waste.

2.5 DEMARICATION

The reuse materials will be placed under the development platform underneath at least 12-inches of clean fill. The reuse material will be placed at the base of the platform. An orange geotextile will be installed at the top of the reuse material as a "demarcation fabric," prior to placement of clean fill. The orange "demarcation fabric" will serve as a marker and will provide a visual indicator of the extent of reuse material, and the clean fill above it.



3.0 PROCEDURES FOR ON-SITE HANDLING AND STORAGE

3.1 SOIL HANDLING AND STORAGE

On-site personnel involved in excavation activities will comply with OSHA rules and regulations, NYSDOL requirements. The Contractor's Project Superintendent will designate an on-site Field Representative to document the on-site management of soils. Soils will not be transported off-Site.

The Field Representative will also independently observe and document the volume of material and the material handling activities. Excavated materials will be documented in daily field reports that will provide a record of the movement of excavated materials. Improper handling and transport of soils may result in the immediate shutdown of the Project until appropriate corrective action is completed.

3.2 EROSION AND SEDIMENTATION CONTROL

The erosion and sedimentation control procedures (ES&C) are meant to combat erosion and sedimentation caused by rainfall and surface run-off. These include control measures commonly used for compliance with the requirements set by the site-specific Storm Water Pollution Prevention Plan (SWPPP). The ES&C procedures and SWPPP are directly addressed under the CMWP and the Contractor drawings will show the locations and details for the required soils ES&C.

3.3 STOCKPILING EXCAVATED MATERIALS

Preference will be to directly load trucks with excavated materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the Engineer. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum thick poly sheeting, will be kept covered always, when not being removed or added to, with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations, and SWPPP. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least 50 feet from the property boundaries, and surface waters, where possible. Straw bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and straw bales will be used as needed near catch basins, surface waters and other discharge points.

3.4 DUST CONTROL

Dust management during invasive on-Site work will include, at a minimum:

- The ability to use a dedicated water spray methodology for roads, excavation areas and stockpiles.
- The ability to properly anchored tarps to cover stockpiles.
- The exercise of extra care during dry and high-wind periods.
- The use of gravel to construct a stabilized construction entrance on egress and other roadways to provide a relatively clean and dust-free road surface.



During excavations the Field Representative will be capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. All dust complaint events, and implementation of all dust controls, including halt of work, will be the responsibility of the Contractor and will be recorded in a logbook and maintained at the Site and available for inspection.

The Construction Health and Safety Plan (CHASP) provides more information on dust management.

3.5 EMERGENCY RESPONSE AND CONTINGENCY

This contingency plan is developed to address the discovery of unknown structures or contaminated materials during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to the Environmental Consultant. Petroleum spills will be reported to the NYSDEC Spill Hotline. Federal agencies can be notified by calling the National Response Center.

- NYS Spill Hotline: 1-800-457-7362
- National Response Center: 1-800-424-8802

If previously unidentified contaminant sources are found during on-Site excavations, sampling will be performed on contaminated source material and surrounding soils to characterize it as “hazardous waste” or “non-hazardous waste” and the findings reported to the NYSDEC. Chemical analytical testing will be performed for Full List volatiles and semi-volatiles, pesticides/PCBs, and metals, as appropriate. Visual, olfactory and photoionization detector (PID) soil screening and assessment will be conducted to identify these areas of previously unidentified impacts under the supervision of a Qualified Environmental Professional (QEP). These findings will be included in the daily report.

Excavated soil from suspected areas of contamination will be stockpiled separately from soil planned for on-site reuse and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event.

All necessary means will be employed to prevent on- and off-Site odor nuisances during excavation and loading of contaminated soil, if encountered. At a minimum, procedures will include: (a) limiting the area of open excavations with potentially impacted soil; and (b) shrouding open excavations with tarps and other covers. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (c) direct load-out of soils to trucks for off-Site disposal; and/or (d) use of chemical suppressing foams.

3.6 SOIL EXPORTED FROM THE SITE

All excavated materials are anticipated for consolidation under the development platform and on-site reuse. In the event that excavated material is not suitable for on-site reuse, then soil will be sampled for export as described under NYSDEC CP-51 Soil Cleanup Guidance, Table 4: Recommended Number of Soil Samples for Soil Exported from a Site. Soil which is not being reused shall be transported to an off-site disposal facility meeting the requirements of 6 NYCRR Part 360 or equivalent out-of-state facility approved by the regulatory agency of that state with a permit to receive excess excavated material.



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Appendix 4 – Tree Removal Plan

NOTE:
432 TREES TO BE REMOVED WITHIN LIMIT OF DISTURBANCE
384 TREES WITHIN PROPERTY BOUNDS BUT NOT WITHIN LIMIT OF DISTURBANCE



REFERENCES:
1. PROPERTY BOUNDARIES, MEET AND BOUND WERE
OBTAINED FROM SURVEY LAST UPDATED ON
APRIL 14, 2010 WHICH SURVEYED BY RICHARD A. SPINELLI
2. TOPOGRAPHIC FROM EASTERN TOPOGRAPHICS WOLFBO, NH
FROM PHOTO DATE: 07 AUG 2014 (4.2 CM GSD).
COMPILED DATE: 08 SEPT 2014
GROUND CONTROL BY: VANESE HANSEN BRUSTLIN, INC
USING DIGITAL TERRAIN MODELING (DTM) METHODS WITH KLT
ATLAS SOFTWARE. DIGITAL FILE NAME: 12703XLATL
3. BUILDING CORNERS AS SHOWN REPRESENT ROOF LINES AS
COLLECTED FROM AERIAL PHOTOGRAPHY.

Appendix 5 – Blasting Guidelines



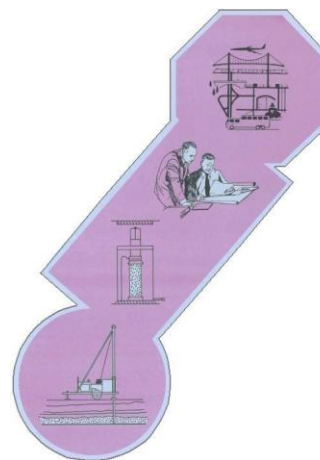
DOT.NY.GOV

PROCEDURES FOR BLASTING



GEOTECHNICAL ENGINEERING MANUAL
GEM-22
Revision #3

GEOTECHNICAL ENGINEERING BUREAU
SEPTEMBER 2011



NEW YORK STATE DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING MANUAL:
PROCEDURE FOR BLASTING

GEM-22
Revision #3

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING BUREAU

SEPTEMBER 2011

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1. INTRODUCTION

A. Purpose

This document specifies the procedure that shall be followed when a Contractor or Permittee is proposing to blast. By following this procedure, the Engineer-In-Charge or the Permit Engineer can help ensure that the Contractor accomplishes the work in a safe and effective manner. Engineering Geologists from the Geotechnical Engineering Bureau are trained and experienced in blasting safety and blasting techniques, and are available to provide assistance during all phases of the blasting operations. Prior to blasting the Contractor shall submit a written blast plan to the Engineer for conditional approval. The Engineer will forward the blast plan to the Engineering Geology Section, Geotechnical Engineering Bureau for review and written comment. After approval of the blast plan, a preblast meeting will be held which shall be attended by the Engineer, the Contractor, the Project Blaster(s), an Engineering Geologist from the Geotechnical Engineering Bureau, and representatives of all interested Agencies to discuss the proposed blasting operations. Final approval to blast will be granted based upon the results of the meeting. Test blasts may be required and may result in modifications to the blast plan. All blasts on Department contracts will be documented by the Engineer using the *Blasting Report Form SM 469 US Customary Units (GE 469 International System of Units)* (See Appendix C).

B. General

Presplit blasting is required on State ROW when the design rock slope is one vertical on one horizontal or steeper and the vertical height of the exposed rock slope exceeds 5 ft. (1.5 m). The contract documents may also specify blasting. The Contractor may choose to use production blasting in conjunction with required presplit blasting or for general rock excavation. The Contractor may also elect to use blasting for trenching operations, structure excavations, and structure demolitions. Permit jobs that involve blasting on State ROW are subject to the same requirements as Department-let contracts. If the Permit Engineer is concerned or uncertain about the effects of blasting adjacent to State ROW, the Engineering Geology Section should be contacted for advice.

Blasters in New York State are required to possess a valid New York State Department of Labor (NYSDOL) issued Blaster Certificate of Competence. The Blaster Certificate of Competence permits the use of explosives specific to the following blasting operations. These are classified as follows: A Class A (Above/Below Ground) Certificate or Class B (Aboveground) Certificate is required for rock blasting. A Class D (Demolition) Certificate is required for demolition of bridge superstructures or substructures. A Class E (Seismic) Certificate is required for seismic surveys. In conjunction with a Blaster Certificate of Competence an Explosives License is also needed for the licensee to purchase, own, possess or transport explosives.

The blaster will conduct all blasting operations in a skillful manner so as not to cause injury, damage property, adversely affect traffic, or cause the migration/accumulation of noxious gases. Blasting activities can have negative consequences which include the following:

1. Flyrock

Flyrock can cause serious injury or damage when it travels outside the blast zone. Flyrock can be caused by: improper blast design; improper or insufficient stemming;

unanticipated geologic features such as voids, soft seams, and other planes of weaknesses; borehole deviation; insufficient burden; and poorly distributed explosives.

The Blaster should inspect any free rock faces for irregularities and geologic conditions that may affect the blast and adjust the drill hole locations accordingly. Profiling the rock face using simple measuring tapes, conventional surveying techniques, or more advanced laser profiling may be warranted. Driller's notes and logs should be kept and used by the Blaster to make adjustments to explosives loading to account for geologic conditions and borehole deviation. The use of Borehole Deviation Surveys may be feasible to determine boreholes that have wandered too close to each other or too close to the rock face. Monitoring of drilling operations will also provide feedback to the drillers so that they may make adjustments to their methods.

Flyrock can also be controlled by using blasting mats or soil cover to retain the exploded rock. It's important that the Blaster make sure that all personnel are outside the blasting area where fly rock can be expected.

2. Vibrations

Blasting generated vibrations can damage underground and aboveground structures. When the Contractor is using a seismograph to monitor vibrations on State ROW, the Standard Specifications (§ 203-3.05 C) provides the maximum particle velocity unless directed otherwise by the Engineer or the Contract Documents. In the absence of seismic monitoring equipment, the explosives loading limits shall be based upon the scaled distance formula in the Standard Specifications. In certain circumstances, NYSDOT contract documents may also require monitoring of adjacent structures that are off the State ROW. NYSDOL regulations (12 NYCRR 61) restrict vibration levels at buildings in the vicinity of blasting operations based upon distance or vibration frequency. Even when vibrations are not at a level sufficient to cause damage, they can disturb individuals and result in complaints. Proper placement and operation of the seismograph is critical for obtaining accurate readings. Vibrations can be controlled by modifying the weight of explosives per delay, the loading density, and the delay pattern. A preblast condition survey of a structure may be required prior to blasting.

3. Displacement of Bedrock

Blasting, primarily trench and ditch blasting, can displace rock and damage adjacent pavement and underground utilities.

4. Noxious Fumes

Blasting generates carbon monoxide and other noxious fumes. The fumes generated during blasting operations, especially during trenching operations, can migrate and collect in excavations, manholes and D.I.'s, and nearby buildings. The build up of significant concentrations of gases can occur 12 hours or more after the blast. All blasting shall be conducted so that the noxious gases generated by the blast do not affect the health and safety of individuals.

When site conditions and blasting procedures indicate that there is the potential for the migration and accumulation of gases, the Contractor should specify information collection activities, modification of blasting procedures, and an action plan in the event of a high reading or alarm. Such site conditions could include but are not limited to: open jointed bedrock (i.e. karstic limestone); an impermeable soil layer overlying the bedrock (i.e. clay or saturated soil); and proximity to buildings. Blasting procedures that may increase the risk include confined (i.e. trenching), large, and frequent blasts. Information collection activities should include preblast surveys of all buildings within a minimum of 300 ft. (100 m) of the blast, which would identify potential sources of entry and potential pathways to the buildings such as buried utility trenches. Information collection activities should also include monitoring of carbon monoxide levels before, during, and after the blast. Modification of blasting procedures should include limiting the size and frequency of blasts to limit the production of noxious fumes, and stripping of the overburden prior to blasting and excavating the shot rock immediately after blasting to allow the venting of gases. The use of vent holes or vent pits may also be necessary. The action plan should cover both building occupants and monitoring personnel.

5. Airblast Overpressure

Although unusual, blasting generated air waves can reach a level where they can damage buildings. NYSDOL (12 NYCRR 61) specifies limits for airblast levels at buildings in the vicinity of blasting operations. Air waves not at a level sufficient to cause damage can disturb individuals, resulting in complaints. Factors that affect air blast overpressure include topography, blast design, and atmospheric conditions. Blasts may have to be redesigned or rescheduled for more favorable atmospheric conditions to minimize air waves.

6. Misfires

Misfires happen when a loaded hole, portion of a loaded hole, or several loaded holes fail to detonate during a blast. Misfires can be caused by failure of the detonation system or by explosive column cutoffs. Sometimes it is apparent immediately after a blast that a misfire has occurred. Other times it's not discovered until the blasted rock is being excavated and unexploded explosives are discovered within the shot rock pile. The Blaster-in-Charge is responsible for checking the shot immediately after the blast for misfired holes and, if discovered, re-detonating the loaded holes. If re-firing a misfired hole presents a hazard, the explosive may be removed by washing out with water or, if underwater, blown out with air. No drilling or digging shall be permitted until all missed holes have been addressed. When unexploded explosives are discovered mixed in with the shot rock, excavation will cease until a Project Blaster is notified and he is able to supervise the continued rock excavation and proper disposal of the unexploded explosives. All personnel involved with excavating shot rock should be vigilant for the presence of unexploded explosives.

Each Certified Blaster is required to report to the NYSDOL any unusual incident or event that occurs during the blasting operations. They are also required to report any instances of premature detonation, damage from air blast, damage from excessive ground vibration, or instances of fly rock. Damage must be reported even when it is alleged and/or the complaint is made after a

substantial lapse of time.

C. Definitions

Airblast - The airborne shock wave generated by an explosion.

ANFO – A blasting agent composed primarily of ammonium nitrate and fuel oil.

Authorized Blasting Assistant – An individual who has been authorized by the certified blaster-in-charge to work on a blasting operation after such blaster-in-charge has confirmed that the individual is either a certified blaster, or otherwise meets the following qualifications:

- (1) Is at least eighteen years old;
- (2) Has been properly trained in the performance of the tasks to be assigned; and
- (3) Has been made aware of and understands the blasting hazards and risks.

Backbreak – Rock broken beyond the limits of the last row of holes in a blast, synonymous with overbreak.

Base Charge – The main explosive charge in the base of a detonator or a heavy charge at the base of a column of presplit powder.

Battered Production Holes – The row of production holes closest to presplit line, drilled at the same angle as the presplit holes.

Bench – A horizontal ledge from which holes are drilled downward into the material to be blasted.

Binary Explosive – A blasting explosive formed by the mixing of two phosphoric materials, for example, ammonium nitrate and nitromethane.

Blast Pattern – The plan view of the drill holes as laid out for blasting.

Blast Plan – A written procedure that details the methods and manner by which a Project blaster will comply with pertinent laws, rules, regulations, and contract documents. The plan shall include all information, as detailed in Section 2A, necessary to evaluate the effectiveness and safety of the proposed blasting operations. Individual blasts on a project are rarely identical. The plan should show the details for a typical blast with the understanding that minor modifications in the field will be allowed. Significant changes to the blasting operations will require that a new blast plan be submitted for approval. When deemed necessary by the Engineer, approved blast plans will be required for each individual shot.

Blaster-in-Charge – The Project Blaster in charge of a specific blast. Responsibilities include delivery of explosives, storage, loading, and detonation of the blast. *A project may have several Project Blasters, but only one blaster is in charge of each blast.*

Blasting Agent – An explosive material, consisting of fuel and oxidizer that can't be detonated with only a No. 8 blasting cap.

Blast Area – An area near any blasting operation in which concussion, flying material or debris, or gases resulting from a detonation of explosives can reasonably be expected to cause injury or property damage.

Blasting Galvanometer – An electrical resistance instrument designed specifically for testing electrical continuity of electric detonators and circuits containing them. Other acceptable instruments for this purpose are Blasting Ohmmeters and Blaster's Multimeters.

Blasting Mat – A Mat of woven steel wire, scrap tires, or other suitable material to cover blastholes for the purpose of preventing flyrock.

Blasting Site – The specific place defined by the Blaster-in-Charge where explosives are used in blasting operations. A blast site is part of the blast area.

Blasting Superintendent – The Contractor may use a Blasting Superintendant to provide general oversight for drilling and blasting operations. However, the Blaster-in-Charge is responsible for each blast.

Blasting Vibrations – The energy from a blast that manifests itself in the form of vibrations which are transmitted through the earth away from the immediate blast area.

Booster – An explosive charge, usually of high detonation velocity and detonation pressure, designed to be used in the explosive initiation sequence between an initiator or primer and the main charge.

Bulk Strength – The strength per unit volume of an explosive calculated from its weight strength and density.

Burden – The distance from the borehole to the nearest free face or the distance between boreholes measured perpendicular to the spacing.

Certified Blaster – An individual who has been issued a "Blaster Certificate of Competence" by the NYSDOL for using explosives.

Collar – The mouth or opening of a borehole.

Column Charge – A long, continuous, unbroken column of explosives in a blasthole.

Continuity Check (Circuit) – A determination that an initiation system is continuous and contains no breaks or improper connections that could cause stoppage or failure of an ignition system. For an electric initiation system, the check is performed both visually and by using a blasting galvanometer or other device. For a non-electric initiation system, the check can only be done visually.

Deck Loading (Decking) – A method of loading blastholes in which the explosive charges, called decks or deck charges, in the same hole are separated by stemming or an air cushion. The separate decks may or may not be fired on the same delay.

Deflagration – An explosive reaction such as a rapid combustion that moves through an explosive material at a velocity less than the speed of sound in the material.

Delay Blasting – The practice of initiating individual explosive decks, boreholes, or rows of boreholes at predetermined time intervals using delay detonators, or other delaying methods, as compared to instantaneous blasting where all holes are fired essentially at the same time.

Delay Detonator – An electric or nonelectric detonator used to introduce a predetermined lapse of time between the application of a firing signal and the detonation of a charge.

Departmental Engineering Geologist – An Engineering Geologist of the Geotechnical Engineering Bureau authorized by the Director of the Geotechnical Engineering Bureau to perform the duties required under the NYS DOT Standard Specifications. Engineering Geologists are trained and experienced in blasting safety and blasting techniques, and are available to provide assistance during all phases of the blasting operations.

Design Rock Slope – A cut slope in rock constructed at the angle and location specified in the contract plans. Presplit blasting is usually used to construct the slope so that the finished slope is stable and free from significant rock hazards.

Detonating Cord – A flexible cord containing a center core of high explosives which may be used to initiate other high explosives.

Detonating Cord Trunkline – The line of detonating cord that is used to connect and initiate other lines of detonating cord.

Detonation – An explosive reaction that moves through an explosive material at a velocity greater than the speed of sound in the material.

Detonator – Any device containing an initiating or primary explosive that is used for initiating detonation in another explosive material.

Drilling Pattern – The location of blast holes in relation to each other and the free face.

Dynamite – A high explosive used for blasting, consisting essentially of a mixture of, but not limited to nitroglycerin, nitrocellulose, ammonium nitrate, sodium nitrate, and carbonaceous materials.

Electric Blasting Circuit – An electric circuit containing electric detonators and associated wiring.

Electric Detonators – A detonator designed for, and capable of, initiation by means of an

electric current.

Emulsion – An explosive material containing substantial amounts of oxidizer dissolved in water droplets, surrounded by an immiscible fuel; or droplets of an immiscible fuel surrounded by water containing substantial amounts of oxidizer.

Explosion – A chemical reaction involving an extremely rapid expansion of gases usually associated with the liberation of heat.

Explosive – Any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion.

Explosives License – Own & Possess – A license issued by NYS Department of Labor for the purpose of purchasing, owning, possessing, or transporting explosives.

Explosive Loading Factor – The amount of explosive used per unit volume of rock. Also called Powder Factor.

Explosive Materials – These include explosives, blasting agents, and detonators. The term includes, but is not limited to, dynamite and other high explosives; slurries, emulsions, and water gels; black powder and pellet powder; initiating explosives; detonators (blasting caps); and detonating cord.

Extra (Ammonia) Dynamite – A dynamite in which part of the nitroglycerin is replaced by ammonium nitrate in sufficient quantity to result in the same weight strength.

Extraneous Electricity – Electrical energy, other than actual firing current or the test current from a blasting galvanometer, that is present at a blast site and that could enter an electric blasting circuit. It includes stray current, static electricity, RF (electromagnetic) waves, and time-varying electric and magnetic fields.

Flyrock – Rocks propelled from the blast area by the force of an explosion.

Fragmentation – The breaking of a solid mass into pieces by blasting.

Free Face – A rock surface exposed to air or water which provides room for expansion upon fragmentation. Sometimes called open face.

Fuel – A substance which may react with oxygen to produce combustion.

Fumes – The gaseous products of an explosion. For the purpose of determining the fume classification of explosive material, only poisonous or toxic gases are considered.

Gelatin Dynamite – A type of highly water resistant dynamite characterized by its gelatinous or plastic consistency.

Geology – A description of the types and arrangement of rock in an area; the description usually includes the bedding dip and strike, the type and extent of pre-existing breaks in the rock, and the hardness and massiveness of the rock, as these affect blast design.

Grains – A weight measurement where 7000 grains are equivalent to 1 lb. (0.45 kg).

Ground Vibration – Shaking the ground by elastic waves emanating from a blast. Usually measured in in/s (mm/s) of particle velocity.

High Explosives – Explosives which are characterized by a very high rate of reaction, high pressure development, and the presence of a detonation wave in the explosive.

Initiator – A detonator, detonating cord or similar device used to start detonation or deflagration in an explosive material.

Lift – The vertical thickness of rock fragmented from a single blast.

Loading – Placing explosive material in a blast hole or against the material to be blasted.

Loading Density – The weight of explosive loaded per unit length of borehole occupied by the explosive, expressed as lbs/ft (kg/m) of borehole.

Loading Limits – The maximum quantity of explosives allowed per delay period as specified by the Standard Specifications.

Loading Pole – A nonmetallic pole used to assist in placing and compacting explosives charges in boreholes.

Low Explosives – Explosives which are characterized by deflagration or low rate of reaction and the development of low pressure.

Magazine – Any building, structure, or container approved for the storage of explosives materials.

Mass Explosion – An explosion which affects almost the entire load or quantity of explosives virtually instantaneously.

Maximum Particle Velocity (Peak Particle Velocity) – The maximum velocity at which the ground surface moves as a wave passes under it. The customary practice is to apply vibration limits to the peak particle velocity of the largest single component on the seismograph.

Millisecond (ms) – One thousand part of a second (.001 or 1/1000 sec.).

Misfire – A blast or specific borehole that failed to detonate as planned. Also the explosive

materials that failed to detonate as planned.

Muckpile – The pile of broken material resulting from a blast.

Nitroglycerin – An explosive chemical compound used as a sensitizer in dynamite.

Nonelectric Detonator – A detonator that does not require the use of electric energy to function.

Nonsparking Metal – A metal that will not produce a spark when struck with other tools, rock, or hard surface.

Overbreak – See backbreak.

Overburden – Material of any nature laying on top of the rock that is to be blasted.

Oxidizer – A substance, such as nitrate, that readily yields oxygen or other oxidizing substances to promote the combustion of organic matter or other fuel.

Particle Velocity - The velocity at which the ground surface moves as a wave passes under it.

PETN – An abbreviation for the name of the high explosive pentaerythritol tetranitrate.

Placards – signs placed on vehicles transporting hazardous materials (including explosive materials) indicating the nature of the cargo.

Phosphoric Materials – Two or more unmixed, commercially manufactured, prepackaged chemical materials which are not classified as explosives but which, when mixed or combined, form a blasting explosive.

Powder Factor – The amount of explosive used per unit volume of rock. Also called Explosive Loading Factor.

Preblast Survey – A documentation of the preexisting condition of structures near an area where blasting is to be conducted.

Premature Firing – The detonation of an explosive charge before the intended time.

Presplitting – A blasting method in which cracks for the final contour or payline are created by firing a single row of holes containing light, well distributed charges, prior to the initiation of the remaining holes in the blast pattern.

Prilled Ammonium Nitrate – Ammonium nitrate in a pelleted or prilled form.

Primer – An explosive charge used to initiate other explosives or blasting agents. The primer is initiated by a detonator or detonating cord to which is attached a detonator.

Production Blasting – A blasting method whose sole purpose is to fragment the rock.

Propagation – The detonation of an explosive charge by an impulse received from an adjacent or nearby explosive charge.

Project Blaster(s) – A certified blaster who has been approved to blast on State ROW (see Blaster-in-Charge).

Relief – The effective distance from a blast hole to the nearest free face (synonymous with burden).

Round – A group of boreholes fired or intended to be fired in a continuous sequence.

Scaled Distance – A factor relating expected vibration levels from various weight charges of explosive materials at various distances.

Secondary Blasting – Blasting to reduce the size of boulders resulting from a primary blast.

Seismograph – An instrument which records ground vibrations generated by blasting operations. Particle velocity displacement is generally measured and recorded in three mutually perpendicular directions.

Sensitivity – A physical characteristic of an explosive material classifying its ability to be initiated upon receiving an external impulse such as impact, shock, flame, friction, or other influence which can cause detonation.

Shaped Charges – An explosive with a shaped cavity specifically designed to produce a high velocity cutting or piercing jet of product reaction; usually lined with metal to create a jet of molten liner material. They are generally used to cut steel members during superstructure demolition.

Shock Tube – A small diameter plastic tube used for initiating detonators. It contains only a limited amount of reactive material so that the energy that is transmitted through the tube by means of a detonation wave is guided through and confined within the walls of the tube.

Short Delay Blasting – The practice of detonating blastholes in successive intervals where the time distance between any two successive detonations is measured in milliseconds.

Slurry – An explosive material containing substantial portion of a liquid, oxidizers, and fuel, plus a thickener.

Stemming – Inert material placed in a borehole on top of or between separate charges. Used for the purpose of confining explosive gases or to physically separate charges of explosive material in the same borehole.

Subdrilling – The practice of drilling boreholes below floor level or working elevation to insure

breakage of rock to working elevation.

Sympathetic Detonation – The detonation of an explosive material as the result of receiving an impulse from another detonation through air, earth, or water. Synonymous with sympathetic propagation.

Tamping – The action of compacting the explosive charge or the stemming in a blasthole. Sometimes refers to the stemming material itself.

Warning Signal – An audible signal which is used for warning personnel in the vicinity of the blast area of the impending explosion.

Water Gel – An explosive material containing substantial portions of water, oxidizers, and fuel, plus a cross-linking agent.

Water Resistance – The ability of an explosive to withstand the desensitizing effect of water penetration.

Weight Strength – The energy of an explosive material per unit of weight.

2. PROCEDURE FOR BLASTING WITHIN NYSDOT ROW

A. Submittal of Written Blast Plan

A written blast plan prepared by a Project Blaster shall be submitted by the Contractor to the Engineer a minimum 10 working days prior to scheduling a preblast meeting. The Engineer shall send a copy of the Blast Plan to the Regional Geotechnical Engineer who shall forward a copy to the Geotechnical Engineering Bureau, Engineering Geology Section for review. The Blast Plan may be returned to the blaster for revision or clarification prior to scheduling the preblast meeting. The blast plan shall detail the methods and manner by which the Project Blaster will comply with pertinent laws, rules, regulations, and contract documents. The plan shall include all information necessary to evaluate the effectiveness of the proposed blasting operations. The blast plan shall include all steps necessary to ensure that the proposed blasting activity does not cause injury, damage property, adversely affect traffic, or cause the migration/accumulation of noxious gases. Individual blasts on a project are rarely identical. The plan should show the details for a typical blast with the understanding that minor modifications in the field will be allowed. Significant changes to the blasting operations will require that a new blast plan be submitted for approval. When deemed necessary by the Engineer, approved blast plans will be required for each individual shot. The blast plan shall include the following items:

1. Project Designations

- Name of Project Blaster(s).
- Photocopy of the Project Blaster's Explosives License (Own & Possess) and Certificate of Competence.
- Employer of the Project Blaster (Contractor or subcontractor).
- Scheduled start date and length of blasting operations and blast monitoring operations.
- Limits of blasting work.
- Requirements for local permits.
- Location of any State owned structures in proximity to the blasting.
- Location of any utilities in proximity to the blasting.
- Location of any contaminants or flammable liquids or vapors in the area to be blasted.

2. Safety and Health Requirements

- Type of audible warning signals and signal sequence.
- Name of company that will deliver explosives to the project site.
- Location of any preblast surveys.
- Location of any vibration monitoring at State owned structures, utilities on or off State ROW, or privately owned structures off State ROW.
- Location of any air blast overpressure monitoring.
- If seismographs will be used, provide the manufacturer's name, model number, and documentation of calibration performed within the last 12 months. Also provide name(s) of seismograph operators and relevant training and experience.
- List steps that will be taken to control flyrock (i.e. blasting mats).

- Are carbon monoxide or other noxious fumes likely to migrate from the blast location or accumulate within nearby structures and, if so, what will be done to detect and prevent their migration.

3. Methods and Procedures

- Type of drilling equipment.
- Method of collaring and aligning presplit drill holes.
- Hole diameter.
- Drilling pattern.
- Use of sequential timer.
- Types of explosives, primers, initiators, and other blasting devices. Include manufacturer's technical data sheets and material safety data sheets for all products.
- Loading parameters:
 - A. Maximum and/or average weight of explosives per volume of rock.
 - B. Maximum weight of explosives per delay.
- Blasting cap delay patterns.

B. Scheduling Preblast Meetings

After approval is granted to schedule the meeting, the Engineer should contact the Engineering Geology Section via the Regional Geotechnical Engineer, and the Contractor, to schedule the meeting. The Contractor is responsible for inviting the Blaster (all Blasters whom the Contractor wants to be designated as Project Blasters must attend the meeting) and all interested parties (including but not limited to utilities, railroads, local political jurisdictions, local law enforcement agencies, and local emergency services) a minimum of 3 work days in advance of the meeting. Representatives for all utilities located within 200 ft. (60 m) of the blasting (300 ft. (90 m) for gas transmission lines) shall be invited.

C. Conducting Preblast Meetings

A preblast meeting shall be held at the site to discuss the proposed blasting operations. In attendance will be the Engineer, the Contractor, the Project Blaster(s) an Engineering Geologist from the Geotechnical Engineering Bureau, and other interested parties. Final approval to blast will be granted based upon the results of the meeting.

A preblast meeting is intended to initiate open communications with the Project Blaster(s) relating to the requirements for rock drilling and blasting, and demolition by blasting work on Departmental projects. An Engineering Geologist from the Geotechnical Engineering Bureau conducts the preblast meeting, which includes discussions on the blast plan and other pertinent information (see Appendix A).

A new preblast meeting will be required to designate new Project Blasters.

D. Inspection and Documentation

An Engineering Geologist will be available to train construction inspection staff in the proper method of inspecting blasting operations including ensuring that the blasting is carried out in a safe manner and documenting each blast using the *Blasting Report Form SM 469 US Customary Units (GE 469 International System of Units)* (see Appendix B, C, and D).

The State requires that, when seismographs are used to monitor vibrations, the Contractor will maintain seismograph records and make them available to the State if requested.

E. Test Blasts

Test sections are required for presplit slopes and test blasts may be required for other types of blasting situations. An Engineering Geologist will evaluate the test blast/section and determine if adjustments to the rock slope design and/or blasting operations are necessary (see Appendix F).

F. Blasting Progress Meetings

At the request of the Engineer, meetings may be held at any time during the project to review the progress of the blasting operations, discuss modifications to the methods and procedures of the written blast plan and/or discuss issues with upcoming blasts. In attendance will be the Engineer, the Contractor, the Project Blaster(s), an Engineering Geologist from the Geotechnical Engineering Bureau, and other interested parties.

As indicated previously, a new preblast meeting is required to designate new Project Blasters.

G. Blasting Review

If a blast causes injury, damage to property, adversely affects traffic, or causes gases to migrate and/or accumulate in a potentially harmful manner, all blasting operations shall cease by order of the Engineer for a review of the procedures. The review will be conducted by the Engineer in conjunction with an Engineering Geologist from the Geotechnical Engineering Bureau to ensure proper procedures and practices were used and to determine if the approved procedures need to be revised. Should the findings of the review indicate the injury, damage, traffic delay, or migration/accumulation of gases was attributed to improper blasting operations, the Blaster-in-Charge may be removed at the State's option.

APPENDICES

1. Opening Remarks
 - a. Verification of Attendance of Concerned Parties
 - b. Statement of DOT Standard Specifications
 - c. Description of Project by Engineer (Scope of Work, Stationing, etc.)
 - d. Start Date for Blasting Operations
 - e. Estimated Time to Complete Blasting
2. Project Designations
 - a. Identify Prime Contractor
 - b. Identify Project Blaster(s)
 - c. Insurance Details
3. Safety and Health Requirements
 - a. State and Federal Laws
 - b. Local Permits/Laws
 - c. Signage and Traffic Control (per MUTCD)
 - d. Audible Warning Signal System
 - e. Proper Delivery and Storage of Explosive Material
 - f. Pre-Blast Survey
 - g. Vibration and Airblast Monitoring (NYSDOL limits and qualified seismograph operators)
 - h. Flyrock Control
 - i. Control of Blast Generated Fumes
 - j. Other concerns (Utilities, Municipalities, etc.)
 - k. Duty to Report Unusual Incidents (12 NYCRR 61)
4. Blasting Specifics/Review of Blast Plan
 - a. Verification of License/Certificate of Competence
 - b. Methods/Procedures
 1. Type of Drilling Equipment
 2. Hole Size
 3. Drilling Pattern
 4. Timing of Blast/Type of System (Electric/Non-Electric)
 5. Explosives (Brand, Size, etc.)
 6. Blasting Caps (Type, Delay, etc.)
 7. Loading of Holes
5. Presplitting
 - a. General Rules/Regulations/Specifications regarding presplit rock slopes
 - b. Test Section
 - c. Rules/Regulations regarding multiple lifts
 - d. Scaling
6. Conclusion

1. Drilling

Establish that:

- a. Prior to blasting, no rock excavation is allowed within 10 ft. (3 m) of the presplit line.
- b. Overburden is stripped from bedrock along the top of the presplit line. Ensure that the bedrock surface is not overexcavated as in the case of weak shale.
- c. The drill steel is straight and in satisfactory condition.
- d. The plumb line for orienting the drill steel alignment is correctly located on a line parallel to the presplit line.
- e. The slope inclination template is the proper dimension and that a minimum 2 ft. (0.6 m) carpenter's level is attached to the template. (Preblast meeting agreement).
- f. The driller or the driller's assistant has achieved the proper drill steel alignment as the drill bit is collared by the bedrock surface. (The alignment can only be assured at this time since once the drill is progressed into the rock, it is very difficult to reconfigure alignment).
- g. The drill hole is of the proper depth (including sub-drilling) for each hole
- h. The pre-split drill holes are on 3 ft. (1 m) centers
- i. The driller is using carbide insert cross bits (preferable to button bits) and solid drill steel (preferable to spiral drill steel).
- j. The closest row of production (fragmentation) holes to the presplit line is drilled no closer than 4 ft. (1.2 m) to and on the same angle as the presplit holes.
- k. Driller's notes and logs should be kept.

2. Blasting

Check:

- a. The depth of each presplit hole and clear any obstructions immediately prior to loading any explosives.
- b. The presplit explosive weight to insure that it is not heavier than the specified maximum weight of 0.35 pound per linear foot (0.5 kg per meter). It is recommended that the inspector count the number of sticks of explosive in a new box, multiply by the standard length of each cartridge to obtain the total cartridge length of each box and divide the box weight by the total cartridge length of box.
- c. That the presplit line is loaded first, and a minimum distance of burden + 3 ft. (1 m) in advance of the closest loaded production hole in the section
- d. That the earliest sequenced delay detonator is affixed to the presplit trunk line detonating cord, ensuring that the presplit slope is blasted prior to any adjacent production hole by a minimum of 25 milliseconds.
- e. That no free flowing explosives (ANFO, prills or water gels) be used in any production holes located within 10 ft. (3 m) of the presplit slope.
- f. That the stemming material to be used for presplit holes is #1A crushed stone rather than crushed gravel. (Crushed gravel has rounded edges and shotguns out of the hole rather than locking together to keep the presplit explosive gasses in the hole to split the bedrock).
- g. Driller's notes and logs should be used by the Project Blaster to make adjustments to explosives loading to account for geologic conditions and borehole deviation.

SM 469 (5/90)

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION**BLASTING REPORT**

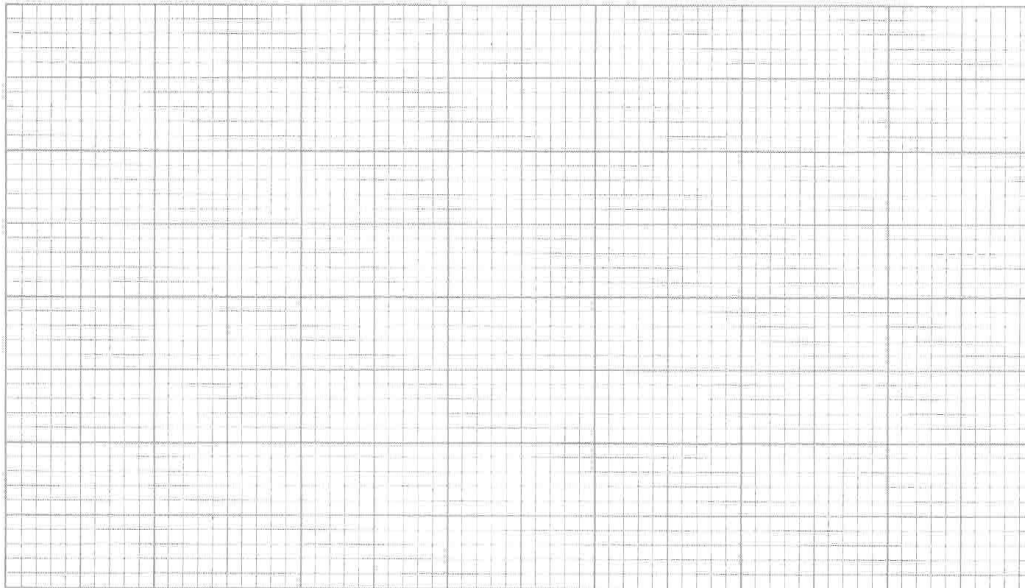
Job Stamp

E.I.C.:
Inspector:
Blaster:Report No.:
Date:
Time:

SHOT HOLE DATA	PRESPLIT			PRODUCTION		
Station Limits	Offset					
No. & Diameter	No.	Diam.		No.	Diam.	
Spacing/Pattern	Spacing		Pattern			
Depth	To Grade	Overdrilling		To Grade	Overdrilling	
Total Depth						
Stemming	Depth	Type		Depth	Type	
Explosive & Detonation Data		Base Charge	Column Charge		Explosive	Blasting Agent
	Producer			Producer		
	Type			Type		
	Dimension			Dimension		
	Weight		# / Ft.	Weight		
Total Weight						
Initiation (type)						
Delays	Number	Period(s)		Number	Period(s)	
Max. lbs/Delay						

Presplit Holes Tested for Obstruction ☐, Burden +3 Ft. (or _____) Loaded Ahead ☐
 Check List Fired 25MS Ahead ☐, Only Cartridges within 10 Feet of Slope ☐

Remarks: _____

IGNITION PATTERN

GE 469 MET (2/00)

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION**BLASTING REPORT**

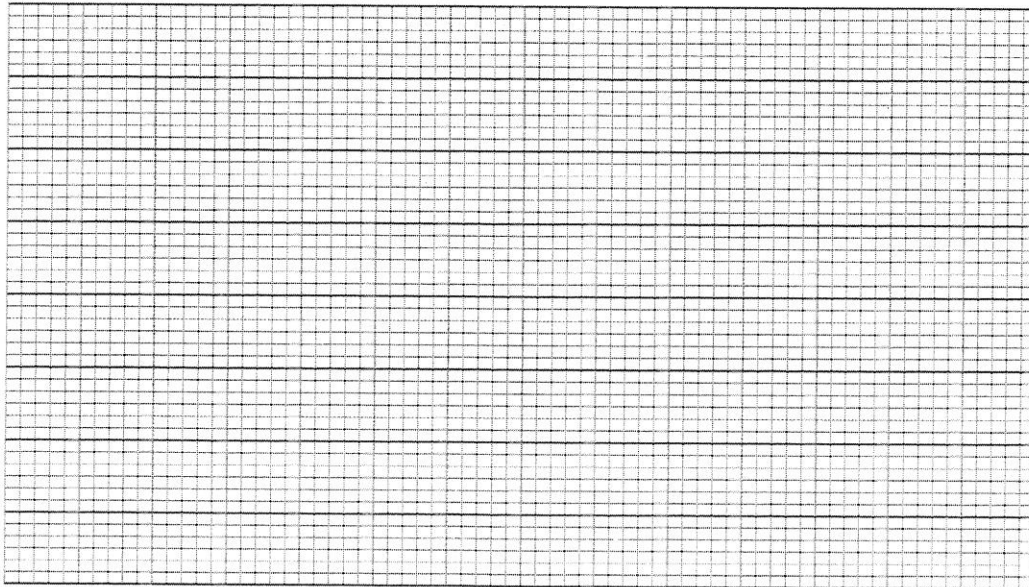
Job Stamp

E.I.C.:
Inspector:
Blaster:Report No.:
Date:
Time:

SHOT HOLE DATA	PRESPLIT			PRODUCTION		
Station Limits	Offset					
No. & Diameter	No.	Diam.		No.	Diam.	
Spacing/Pattern	Spacing			Pattern		
Depth	To Grade	Overdrilling		To Grade	Overdrilling	
Total Depth						
Stemming	Depth	Type		Depth	Type	
Explosive & Detonation Data		Base Charge	Column Charge		Explosive	Blasting Agent
	Producer			Producer		
	Type			Type		
	Dimension			Dimension		
	Weight		kg/m	Weight		
Total Weight						
Initiation (type)						
Delays	Number	Period(s)		Number	Period(s)	
Max. kg/Delay						

Presplit Holes Tested for Obstruction ☐ , Burden +1 m (or _____) Loaded Ahead ☐
 Check List Fired 25MS Ahead ☐ , Only Cartridges within 3m of Slope ☐

Remarks: _____

IGNITION PATTERN

Heading Data

Job Stamp -	Imprint job stamp under "Job Stamp".
E.I.C. -	Enter the name of the Engineer-in-Charge.
Inspector -	Enter the name of the state or consultant blast inspector.
Blaster -	Enter the name of the Blaster-in-Charge.
Report No. -	Sequentially number from 1, beginning with the first blast detonated.
Date -	Enter the date of the blast. If the shot is loaded one day and detonated the next, enter the date of the detonation.
Time -	Enter the actual time and date (if different from loading) the blast is detonated (Hr. & Min).

Shot Hole Data

Station Limits -	Enter the stations of the beginning and end of the presplit holes to be detonated if presplit is involved. Do the same for production holes, if production only is loaded.
No. & Diameter -	Enter total number of presplit holes & diameter. Do the same for production holes.
Spacing/Pattern -	Maximum 3 ft. (1 m) on center for presplit holes. For production pattern enter average distance between holes in rows and average distance between rows (Spacing X Burden) in feet (meters).
Depth -	Enter range of depth to grade next to "To Grade", enter depth of overdrilling next to 'Overdrilling' (feet) (meters).
Total Depth -	The sum of 'To Grade' & 'Overdrilling' = total depth. Because 'to grade' and 'overdrilling' are usually ranges, 'total depth' will usually be a range also.
Stemming -	Depth in feet (meters), from top of drill hole to top of explosives. For presplit holes it's required that the presplit powder be within 3 ft. (1 m) of the ground surface and the entire hole stemmed.
Type -	It's required that No. 1-A crushed stone be used for stemming presplit holes. Production holes can be stemmed with drill cuttings or soil as long as it's effective.

Explosive and Detonation Data

- Producer - Enter the manufacturer of each explosive (base charge, column charge, production explosive & blasting agent). Examples are Dyno Nobel and Austin.
- Type - Enter the manufacturer's product name of each in the appropriate column. Also enter the strength percentage (40%, 60%, etc.) as on the container. Examples are Dynosplit and Unimax.
- Dimension - Enter diameter and length of the individual cartridges in the appropriate columns.
- Weight - Enter weight per stick of base charge, weight/foot (weight/meter) of presplit powder, weight per stick of production charges & weight of column for blasting agent. All weight is in pounds (kilograms).
- Total weight - Enter the sum total for each type of explosive, base charge, column charge, production explosive & blasting agent.
- Initiation (Type) - Enter 'electric blasting (EB) caps' or 'non electric blast (NEB) caps' or other method as used. List cap manufacturer brand and series.
- Delays - Enter the number of different delay periods used. Period(s): enter the delay periods used. Examples are: electric – 25,75,100 ms; nonelectric – 25/350, 25/500 ms.
- Max. lbs/Delay
Max. kg/Delay - Add the weight of explosives on each different delay per blast. The greatest weight of explosives detonated per delay is the max. pounds/delay (kilograms/delay) at 25 ms or 75 ms or 250 ms, etc.

Presplit Check List

Before Loading any holes with explosives

1. The blaster must designate P-S holes in the section to be loaded.
2. Back up from end and designate the production section to be loaded.
3. Check all P-S holes for obstruction and clear all P-S holes before loading any P-S or production powder.

Holes Tested for Obstructions ☐ - check the box only after all presplit holes have been tested for clearance immediately before loading any explosives. Use either loading poles, measuring tape or some other device which can assure that the holes are clear to the full drilled length. All obstructed holes must be cleared before any explosives loading can begin.

Burden +3 ft. (or _____)

(Burden +1 m (or ____))

Loaded Ahead ☐ - check the box only after it has been determined that the presplit line is loaded with explosives a length which equals the burden + 3 ft. (+ 1 m) past the closest production hole to the end of the presplit line. Usually this works out to 3 presplit holes. No production holes can be loaded past a perpendicular line to the presplit line from the third hole back.

Fired 25 MS ahead ☐ -

Presplit holes must be detonated a minimum of 25 MS ahead of the production holes in that section.

Only Cartridges within 10 ft. of Slope ☐ -

(Only Cartridges within 3 m of Slope ☐)- No uncontained or poured explosives are allowed in holes within 10 ft. (3 m) of the presplit plane.

Remarks - Utilized this area to report on the results of the blast, i.e. damage/no damage, cutoffs, flyrock, road closed, traffic delay, seismograph locations and readings, carbon monoxide monitor locations and readings, etc.

- Ignition Pattern-** Utilize this area to draw an accurate plan view of drill holes, including:
- a. edge of rock
 - b. north arrow
 - c. station and offset of beginning and end of presplit line
 - d. hole numbers
 - e. spacing
 - f. burden
 - g. timing of initiation of each hole (adjusted to sequential timer if one is used. Diagram wiring connections).
 - h. important geologic features, i.e., seams, boulders, etc.
 - i. hole depths and lbs. (kg) of explosives per hole & per deck, if used
 - j. show detonation cord type & location

Transportation of explosives (12 NYCRR 39; 49 CFR 177; 29 CFR 1926 Subpart U)

- A vehicle carrying explosives shall not be left unattended or unguarded. Someone able to move the vehicle, familiar with the hazards of the material being transported and who knows what to do in an emergency must be awake in the vehicle or within 100 ft. (30 m) of the vehicle and have it in clear view.
- It is prohibited to park within 300 ft. (90 m) of a bridge, tunnel, building, a place where people gather, or an open fire unless absolutely necessary to perform their work.
- The vehicle shall not be parked within 5 ft. (1.5 m) of a traveled roadway.
- The vehicle shall make no unnecessary stops.
- Explosives shall be loaded/unloaded only when engine is off and parking brake is set.
- Do not travel through congested areas or heavy traffic unless it is a designated route.
- No device or material capable of producing spark, flame or heat shall be placed or carried on a vehicle containing explosives.
- Proper placards are required on both sides and the front and back of the vehicle.
- Fire extinguishers required with a rating of at least 10: ABC. If carrying 200 lbs. (90 kg) or more of explosives, two 10 to 12 lbs. (4.5 to 5.5 kg) carbon dioxide fire extinguishers or two 4 to 7 lbs. (1.8 to 3 kg) dry chemical fire extinguishers are required.
- Explosives shall not be transported on a trailer and a vehicle carrying explosives shall not have a trailer in tow.
- The sides and ends of an open-ended vehicle shall be high enough to prevent packages of explosives from falling off the vehicle and the explosives shall not be stacked higher than the sides of the vehicle.
- Up to 50 detonators may be carried on a vehicle containing explosives provided that: the detonators are in their original shipping containers, or a box constructed of 1 in. (25 mm) lumber lined with padding not less than ½ in. (13 mm) thick or wrapped in cloth with cloth separating each detonator, and the detonators must be in a place remote from the explosives that is easily accessible for quick removal.
- Exposed ferrous metal on the vehicle body that may come in contact with the explosive packages must be covered with wood or other non-ferrous material.

Explosive safety and handling (29 CFR 1926 Subpart U)

- Smoking, firearms, matches, open flames lamps, flames, heat producing devices and sparks are prohibited in or near magazines or while explosives are being handled, transported or used.
- All explosives must be accounted for at all times. Explosives not in use shall be in a locked magazine.
- Explosives or blasting agents shall not be abandoned.
- Original containers or class II magazines shall be used for the transport of detonators and explosives from storage to the blasting area.
- Blasting operations above ground shall be conducted between sunup and sundown.
- Electric detonators shall be short-circuited and shunted in holes which have been primed until wired into the blasting circuit.
- Blasting operations shall be suspended and personnel shall leave the blasting area upon the approach and progress of an electrical storm.
- Blasting zone signs and signs warning against the use of mobile radio transmitters must be posted on all roads within 1000 ft. (300 m) of the blasting area.
- Mobile radio transmitters which are less than 100 ft. (30 m) from electric blasting caps shall be deenergized and effectively locked.
- Empty boxes and paper and fiber packing materials, which have previously held explosives, shall not be used for any purpose and shall be destroyed by burning.
- Blasting operations in the vicinity of overhead power lines, communication lines, utilities, or other services and structures will not be carried out until the Utilities are notified and measures for safe control have been taken.
- Use of black powder is prohibited.
- Smoking and open flames are not permitted within 50 ft. (15 m) of explosives and detonator storage magazines.
- Tamping will be done with wood rods or plastic tamping poles without exposed metal parts. No violent tamping is allowed.
- After loading holes, all unused explosives and detonators must be returned to an authorized magazine.

- No person will be allowed to deepen drill holes which have previously contained explosives or blasting agents.
- Equipment will not be operated within 50 ft. (15 m) of loaded holes (no drilling, digging, etc.).
- Electric cables in the proximity of the blast area shall be deenergized and locked out.
- Holes will be checked prior to loading to determine depth and conditions of the hole.
- No drilling is allowed within 50 ft. (15 m) of a hole that has been loaded with explosives and has failed to detonate.
- All blast holes will be stemmed to the collar or a point that will confine the charge.
- Blasting cap leg wires will be kept short-circuited (shunted) until they are connected into the circuit for firing.
- A code of blasting warning signals (29 CFR 1926) shall be posted conspicuously at the operation and all employees shall be familiar with the signals.
- A loud signal must be given by the blaster of record prior to firing the blast.
- Flaggers must be safely positioned on roadways passing through the danger zone to stop traffic during the blasting operations.
- Following the blast, the blasting machine or other initiation devices shall be disconnected from the firing line or turned off in the case of power switches.
- The blaster shall check the surrounding rubble and blasting area to determine that all charges have been exploded.
- If a misfire occurs, only those employees necessary to do the work shall remain in the blast zone.
- No attempt will be made to extract explosives from any charged or misfired hole. A new primer shall be installed and the hole reblasted. If refiring the hole is a hazard, the explosives may be removed by washing out with water.
- No drilling, digging, or picking will be permitted until all missed holes have been detonated.

Explosive licensing (12 NYCRR 39, 12 NYCRR 61)

- To purchase, transport, own and possess explosives, an explosives license is required.
- The handling and placing of explosives in preparation of a blast shall be performed by a certified blaster or by persons under the supervision of a certified blaster.
- Only a certified blaster may detonate explosives. The Blaster must be certified in the specific Department of Labor category in order to perform the work.

Explosive storage (12 NYCRR 39, 29 CFR 1926 Subpart U)

- Magazines and all enclosures used for storage of explosives shall be kept locked.
- Inventory of explosives shall be taken at the end of the day after blasting operations or whenever the magazine is opened.
- Magazines shall be inspected at least every 3 days.
- No smoking or flames are allowed within 50 ft. (15 m) of any explosive or magazine.
- No blasting equipment shall be stored in a magazine.
- Separate magazines shall be provided for explosives and detonators.
- No lights in magazine except battery activated electric flashlights or electric lanterns enclosed in rubber or other insulating cover.
- Ground around the magazine for a distance of 25 ft. (7.5 m) must be kept clean of flammable debris such as dry leaves and grass.
- No discharge of firearms at or within 500 ft. (150 m) of a magazine.
- Magazines must be located certain distances from buildings, railways, highways and other magazines based on the quantity of explosives stored in the magazine.
- The distances of separation can be decreased by 50% if the magazine or other structure containing explosives is protected by an efficient barricade.
- Explosive quantity conversion of detonators and detonating cord.
 - Cap size up to and including #8: 1000 caps are rated equivalent to 1.5 lbs. (0.7 kg) of explosives.
 - Cap size larger than #8: 1000 caps are rated equivalent to 3 lbs. (1.4 kg) of explosives.

- Detonating cord up to and including 60 grains/foot: 1000 ft. (300 m) is rated equivalent to 9 lbs. (4 kg) of explosive.
- Detonating cord above 60 grains/foot: 1000 ft. (300 m) is rated equivalent to 15 lbs. (6.8 kg) of explosives.

Underground utilities (12 NYCRR 53)

- Underground facilities within 15 ft. (4.5 m) of a proposed excavation or demolition must be staked, marked or otherwise designated.
- Verification shall be accomplished by exposing the underground facility or its encasement to view or by other means mutually agreed to by the excavator and operator.
- Powered equipment shall not be used within 4 in. (100 mm) of the verified location of an underground facility.

APPENDIX F Geologic Evaluation of Test Section

A test section is required on all newly constructed (or reconfigured) presplit slopes. The test section should be cleared and scaled in such a manner that its appearance and attitude be identical to that of the finished rock cut.

The test section exposes all discontinuities present in the bedrock. Since even the most advanced design exploration methods cannot reveal every feature present, the test section will enable the Engineering Geologist to determine if the slope will be stable as designed. If it is determined upon evaluation of the test section that the slope is unstable, the Engineering Geologist can change the slope design to one which will be stable.

The Engineering Geologist will inspect the test section, paying specific attention to drill butt traces. The geologist will examine:

1. Initial alignment of drill steel
2. Divergence, convergence or oversteepening of drilled holes
 - Possible causes:
 - a. Drill Bits (Cross Bits are preferable to Button Bits)
 - b. Drill Steel (Solid Steel is preferable to Spiral Steel)
 - c. Geology
 1. Alternating Beds (e.g. shale/sandstone/shale)
 2. Jointing/Fractures/Voids
 3. Soft Rock (leading to gravity caused oversteepening)
 - d. Excessive down pressure
3. Final Appearance of Finished Slope
 - a. Dimensions of Finished Product
 - b. Rock Condition
 - c. Unconformities/Significant Facies Changes
4. Concerns/Issues as the slope weathers

If the Engineering Geologist is not satisfied with the final appearance of the test section, or more information is needed, an additional test section may be required to fully address all concerns.

Appendix 6 – Site Plans

Plotted By: Cheng, Jason Sheet Set: Ktho Layout: August 30, 2018 03:45:35pm K:\VMP-Civil\12056005-Hampshire\CCV6_CAD\Plan\Sheets\28677-02_PLOT.dwg

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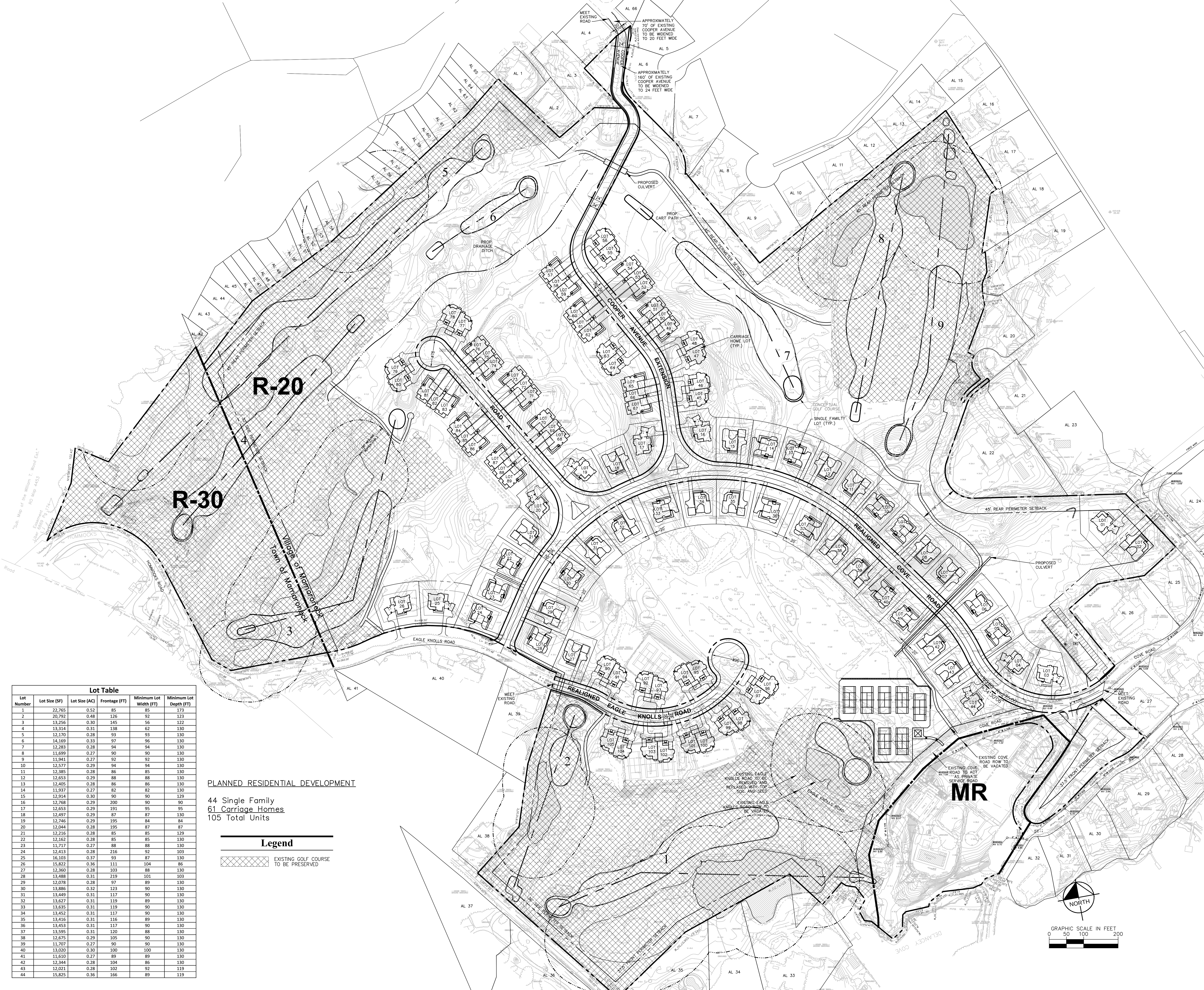
Lot Table					
Lot Number	Lot Size (SF)	Lot Size (AC)	Frontage (FT)	Minimum Lot Width (FT)	Minimum Lot Depth (FT)
1	22,765	0.52	85	85	173
2	20,792	0.48	126	92	123
3	13,236	0.30	145	56	122
4	13,314	0.31	138	62	130
5	12,170	0.28	93	93	130
6	14,169	0.33	97	96	130
7	12,283	0.28	94	94	130
8	11,699	0.27	90	90	130
9	11,941	0.27	92	92	130
10	12,577	0.29	94	94	130
11	12,385	0.28	86	85	130
12	12,653	0.29	88	88	130
13	12,405	0.28	86	86	130
14	11,937	0.27	82	82	130
15	12,914	0.30	90	90	129
16	12,768	0.29	200	90	90
17	12,653	0.29	191	95	95
18	12,497	0.29	87	87	130
19	12,746	0.29	195	84	84
20	12,044	0.28	195	87	87
21	12,216	0.28	85	85	129
22	12,162	0.28	85	85	130
23	11,717	0.27	88	88	130
24	12,413	0.28	216	92	103
25	16,103	0.37	93	87	130
26	15,822	0.36	111	104	86
27	12,360	0.28	103	88	130
28	13,488	0.31	219	101	103
29	12,078	0.28	97	89	130
30	13,886	0.32	123	90	130
31	13,449	0.31	117	90	130
32	13,627	0.31	119	89	130
33	13,635	0.31	119	90	130
34	13,452	0.31	117	90	130
35	13,416	0.31	116	89	130
36	13,453	0.31	117	90	130
37	13,595	0.31	120	88	130
38	12,675	0.29	105	90	130
39	11,707	0.27	90	90	130
40	13,020	0.30	100	100	130
41	11,610	0.27	89	89	130
42	12,344	0.28	104	86	130
43	12,021	0.28	102	92	119
44	15,825	0.36	166	89	119

PLANNED RESIDENTIAL DEVELOPMENT

44 Single Family
61 Carriage Homes
105 Total Units

Legend

EXISTING GOLF COURSE
TO BE PRESERVED



HAMPSHIRE COUNTRY CLUB
PLANNED RESIDENTIAL DEVELOPMENT (P.R.D.)
PREPARED FOR
HAMPSHIRE RECREATION LLC
VILLAGE OF MAMARONECK
NEW YORK

LAYOUT PLAN

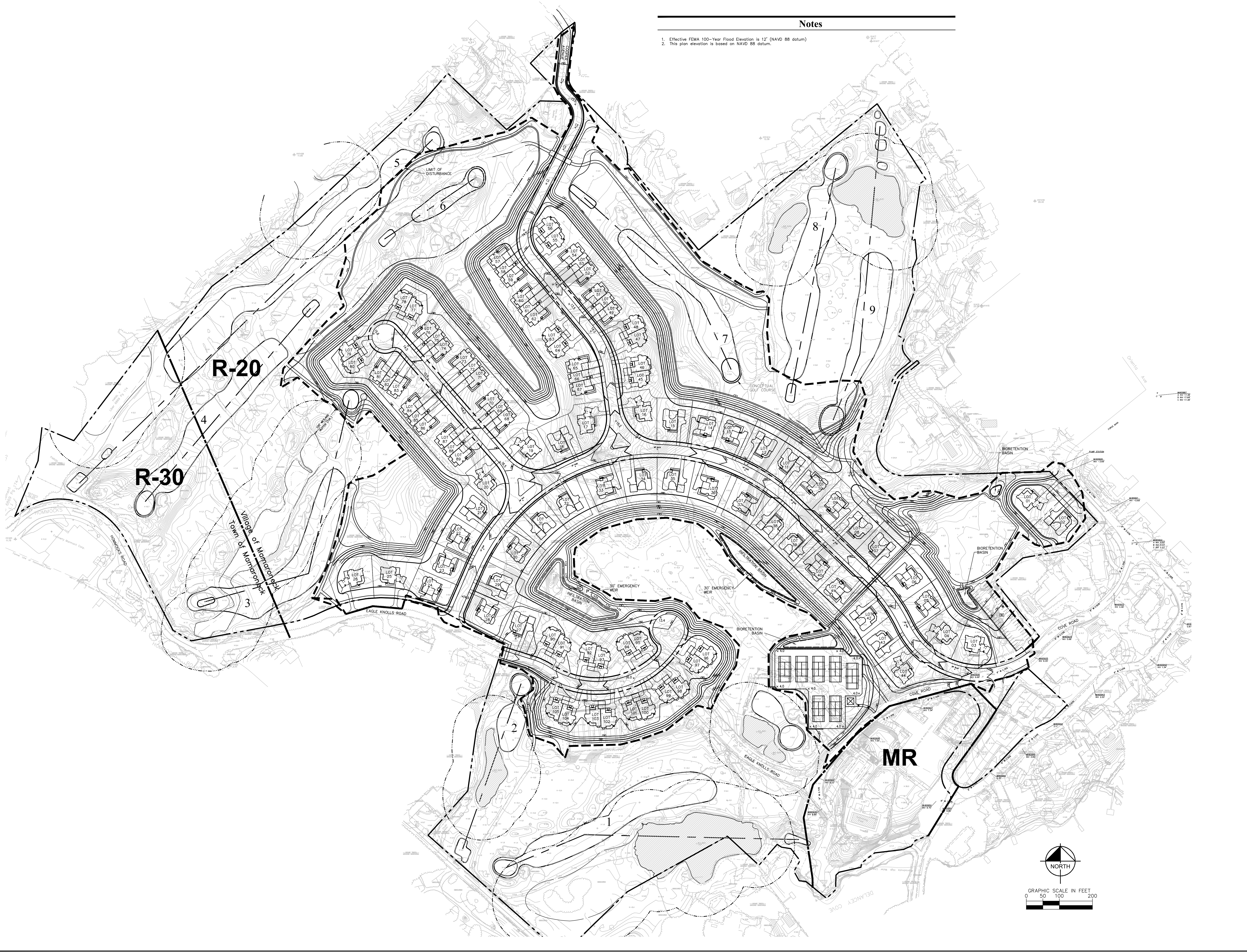
KMA PROJECT
112056005
JUNE 25, 2015
SCALE AS SHOWN
DESIGNED BY MWJ
DRAWN BY DAR
CHECKED BY MWJ



Kimley-Horn
of New York, P.C.
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Engineering, Planning, and Environmental Consultants
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White Plains, NY 914-368-9200

No.	REVISIONS	DATE	BY
4	DEIS COMPLETENESS REVISION	08/23/18 MWJ	
3	DEIS COMPLETENESS REVISION	10/20/17 MWJ	
2	DEIS COMPLETENESS REVISION	8/04/17 MWJ	
1	REVISED LAYOUT TO PRESERVE EXISTING GOLF COURSE	9/28/16 MWJ	

Plotted By: Cheong, Jason Sheet Set: Khs Layout: C-2 Grading August 30, 2018 03:46:59pm K:\WHP_Civil\112056005-Hampshire\6_CAD\PlanSheets\2867702_PL01.dwg
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Notes

1. Effective FEMA 100-Year Flood Elevation is 12' (NAVD 88 datum)
2. This plan elevation is based on NAVD 88 datum.

HAMPSHIRE COUNTRY CLUB PLANNED RESIDENTIAL DEVELOPMENT (P.R.D.) PREPARED FOR HAMPSHIRE RECREATION LLC VILLAGE OF MAMARONECK NEW YORK	SHEET NUMBER C-2	GRADING PLAN	KHA PROJECT 112056005 JUNE 25, 2015 SCALE AS SHOWN DESIGNED BY MWJ DRAWN BY DAR CHECKED BY MWJ  Kimley-Horn of New York, P.C. © 2017 KIMLEY-HORN OF NEW YORK, P.C. Engineering, Planning, and Environmental Consultants 1 N Lexington Ave, Suite 1575 White Plains, NY 914-368-9200	<			
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