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CULTURAL RESOURCE ASSESSMENT

CROTON WATER
TREATMENT PLANT

MOSHOLU GOLF COURSE, VAN CORTLANDT PARK

BRONX, NEW YORK

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Cultural Resource Assessment Croton Water Treatment Plant Mosholu Golf Course Van Cortlandt Park Bronx County New York

Prepared For:

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On behalf of New York City Department of Environmental Protection

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1 EXECUTIVE SUMMARY

The New York City Department of Environmental Protection (NYCDEP) proposes to design, construct and place into operation a 290 million-gallon-per-day (mgd) Croton Water Treatment Plant (WTP) to provide filtration and disinfection of the Croton Water System. The project would also include the construction of new raw water and finished water tunnels to connect the proposed plant to the New Croton Aqueduct (NCA), and improvements and rehabilitation of structures related to distribution connections at and near Jerome Park Reservoir. The purpose of completing the Final Supplemental Environmental Impact Statement (SEIS) is to evaluate three sites for the water treatment plant: the Eastview Site in the Town of Mount Pleasant, Westchester County, the Mosholu Site in the Bronx, Bronx County, and the Harlem River Site, also in the Bronx, Bronx County and determine the preferred site for the WTP. Some alternatives include work at other sites along the NCA, and one alternative includes a future connection to the proposed Kensico-City Tunnel. This project description provides details relating to construction and operation of the proposed plant at the Mosholu Site.

The Croton WTP would be located at the Mosholu Golf Course and Driving Range. The site is located within the 1,146-acre Van Cortlandt Park in the Borough of the Bronx, New York. This site is owned by New York City and is under the jurisdiction of the NYC Department of Parks and Recreation (NYCDPR). The Golf Course and driving range are bound by the Mosholu Parkway and Major Deegan Expressway to the west and north, Jerome Avenue and the Interborough Rapid Transit (IRT) No. 4 elevated train (the Woodlawn station) to the east, and West Gun Hill Road to the south. The Golf Course and driving range comprise approximately 74 acres of the 1,146-acre park. The proposed project would be situated under a portion of the 13-acre driving range. Total ground disturbance during construction including staging area, access road, utility trenching etc. will be approximately 29.3 acres. During construction, the Golf Course would remain open with a temporary clubhouse, driving range, and parking facilities made available through the Shandler Recreation Area to the north, adjacent to the Golf Course and driving range. The temporary Golf Course would be a modification of the existing one, and would still have 9 holes open to the public during the construction period. Following construction, these facilities would be replaced with a new Golf Course clubhouse, maintenance facility, and new Golf Course parking lot. The nine-hole Golf Course would be replaced with an 18-hole "Executive" (short-hole) course with a possible alternative of a nine-hole Golf Course in the future.

1.1 HISTORIC RESOURCES

The land that now comprises Van Cortlandt Park was acquired by New York City as parkland in 1888. Although it is historically important, no formal process has been undertaken to definitively determine its eligibility for landmark status. However, a detailed account of the park's history, structures, and existing conditions in 1986 was prepared by Storch Associates, Westbury, New York, and is on file with the New York City Landmarks Preservation Commission (LPC).

The Mosholu Golf Course was created in 1914 but was considerably altered in the 1930s. Although the proposed project would result in a temporary visual alteration of the Golf Course, it is not considered to have a significant adverse impact on historic resources since the driving range and Golf Course would be rebuilt.

The Mosholu Golf Course Clubhouse, although probably not eligible for listing on the National Register as an individual structure, is of historical note. The Olmsted Center currently maintains a file on the structure. The building is reminiscent, on a small scale, of the grand clubhouses erected at private suburban golf courses, but this was accomplished through architectural renovations in the 1970s. The building is a brick Colonial Revival structure built in 1928. The most notable features of the building are the entrance portico and the gables, but these were added in 1971. While photo-documentation of the existing building is not necessary, it is at the discretion of the review agency. However, it would be difficult to capture the look and feel of the 1928 clubhouse due to the substantial 1971 additions to the sides and front of the structure.

The proposed WTP would be visually and physically separated from any historic and/or landmarked structures within the park or the surrounding area (e.g., Van Cortlandt Mansion, Vault Hill, and Woodlawn Cemetery). Therefore no significant impacts to existing historic structures are expected.

Construction would entail connections with the buried NCA, a National Register eligible structure. The Aqueduct is still in active use and rehabilitation of a portion of it would be necessary. Due to the eligible listing of the NCA, prior to construction, SHPO and the Secretary of the Interior's Standards for the Treatment of Historic Properties would be consulted to retain the historic character of the structures. This consultation would ensure that any future proposed work would not cause any significant adverse impact to the historic structures.

1.2 ARCHAEOLOGICAL RESOURCES

Although there has been ground disturbance and a continuously evolving recreational landscape, there is still a potential for precontact and historical archaeological resources to have remained undisturbed. Consequently, if the Mosholu Site were selected for the WTP, a Phase 1B investigation would be conducted by a pre-qualified specialist in accordance with the New York Archaeological Council's Standards (1994) to verify the presence or absence of archaeological deposits. A protocol for the Phase 1B field investigation would be prepared under separate cover, and would be submitted to SHPO. The Phase 1B field investigation would occur prior to any construction-related excavation on the site. These investigations and the subsequent mitigation of any findings would avoid any significant adverse impacts to archaeological resources.

2 INTRODUCTION

The New York City Department of Environmental Protection (NYCDEP) proposes to design, construct and place into operation a 290 million-gallon-per-day (mgd) Croton Water

Treatment Plant (WTP) to provide filtration and disinfection of the Croton Water System. The project would also include the construction of new raw water and finished water tunnels to connect the proposed plant to the New Croton Aqueduct (NCA), and improvements and rehabilitation of structures related to distribution connections at and near Jerome Park Reservoir. The purpose of completing the Draft Supplemental Environmental Impact Statement (SEIS) is to evaluate three sites for the water treatment plant: the Eastview Site in the Town of Mount Pleasant, Westchester County, the Mosholu Site in the Bronx, Bronx County, and the Harlem River Site, also in the Bronx, Bronx County. Some alternatives include work at other sites along the NCA, and one alternative includes a future connection to the proposed Kensico-City Tunnel. This report provides details relating to construction and operation of the proposed plant at the Mosholu Site (Figure 1).

Construction of a proposed Croton WTP at the Mosholu Site would include a new raw water tunnel to convey untreated water from the New Croton Aqueduct (NCA) to the water treatment plant site; a raw water pumping station; a main treatment building that would house all the process elements, administrative offices, a conference room, a small process laboratory, maintenance and storage facilities, electrical and heating, ventilation and air conditioning (HVAC) rooms; a treated water pumping station; and a new treated water tunnel to convey treated water from the proposed plant back to Jerome Park Reservoir (JPR) and the City's distribution system. During construction, an approximately 800-foot long ornamental wall would be constructed along Jerome Avenue that would provide a visual barrier and aid in noise attenuation. In addition, construction of the proposed plant would require the rehabilitation and stabilization of several off-site Croton System facilities. The off-site location points where activity would occur include the following: Gate House No. 1 (Bronx, NY) and modifications to the facilities in and around the Jerome Park Reservoir (Bronx, NY).

The Croton WTP would be located at the Mosholu Golf Course and Driving Range. The site is located within the 1,146-acre Van Cortlandt Park in the Borough of the Bronx, New York (Figures 1, 2). This site is owned by the City and is under the jurisdiction of the NYC Department of Parks and Recreation (NYCDPR). The Golf Course and driving range are bound by the Mosholu Parkway and Major Deegan Expressway to the west and north, Jerome Avenue and the Interborough Rapid Transit (IRT) No. 4 elevated train (the Woodlawn station) to the east, and West Gun Hill Road to the south. The Golf Course and driving range comprise approximately 74 acres of the 1,146-acre park. Existing facilities at the water treatment plant site include a clubhouse, driving range, nine-hole course and a parking lot for approximately 75 cars. The proposed project would be situated under a portion of the 13-acre driving range. During construction the golf course would remain open with a temporary clubhouse, driving range, and parking facilities made available through the Shandler Recreation Area to the north, adjacent to the golf course and driving range. The temporary golf course would be a modification of the existing one, and would still have 9holes open to the public during the construction period. Following construction, these facilities would be replaced with a new golf course clubhouse, maintenance facility, and new golf course parking lot. The nine-hole golf course would be replaced with an 18-hole "Executive" (short-hole) course with a possible alternative of a nine-hole golf course in the future.

In compliance with the City Environmental Quality Review (CEQR) process as set forth in Executive Order 91 of 1977 and its amendments creating the Rules of Procedure for CEQR, adopted by the City Planning Commission on June 26, 1991 and revised in October 2001 and the State Environmental Quality Review Act (SEQRA) (Section 8-0113, Article 8 of the Environmental Conservation Law) as set forth in 6NYCRR Part 617, establishing the State Environmental Review Process (SERP) as required by the State Revolving Loan Fund Program, a series of studies on development of the proposed project site, Historical Perspectives, Inc. was retained to complete a cultural resources assessment of the Mosholu site.

The purpose of this study is to identify the significant archaeological and historic resources in or around the immediate vicinity of the proposed water treatment facility and to address any potential impacts caused by the proposed installation and associated infrastructure connections. If significant adverse impacts are identified, the study is to also delineate appropriate mitigation measures.

3 METHODOLOGY

Background research for the proposed Croton WTP site was designed to provide a framework for assessing potential cultural resources, and to address two major questions. What is the specific level of potential for precontact and historical archaeological resources of significance to exist in the project site; and, what is the likelihood that such resources have survived historical subsurface disturbances. Sufficient information was gathered to compare, both horizontally and vertically, the precontact past, the historical past, and the subsurface disturbance record. This also served to establish twentieth century construction episodes to aid in the assessment of architectural remains. In order to address potential sensitivity research included a review of primary and secondary sources, cartographic analysis, site files review, informant interviews, and field visits. Each of these tasks is discussed below

3.1 REVIEW OF PRIMARY AND SECONDARY SOURCES

Many local and regional histories were examined for relevant data to help place the site within a historical context. These include works such as Stephen Jenkins' The Story of the Bronx, Robert Bolton's The History of the Several Towns, Manors, and Patents of the County of Westchester, J. Thomas Scharf's History of Westchester County, New York, Including Morrisania, Kings Bridge, and West Farms, and Shonnard and Spooner's History of Westchester County, as well as more recent works such as John McNamara's History in Asphalt. Plans and descriptions of the Golf Course were obtained at the Olmsted Center maintained by the New York City Department of Parks.

For the precontact period, archaeological literature, such as William Ritchie's *The Archaeology of New York State* provided an overview of the lifeways of the Native inhabitants of New York. In addition, Robert Steven Grumet's *Native American Place Names in New York City*, and Reginald Bolton's *Indian Life of Long Ago in the City of New*

York furnished valuable information on Native American settlements. Furthermore, soilboring logs were reviewed to establish subsurface conditions.

Cartographic Analysis

In order to determine the original topography and compile a disturbance record for the Mosholu Site, cartographic resources were examined. Information collected included data on the site's possible land-use over time and building history. Historical maps were examined at the Map Division of the New York Public Library and the Westchester County Historical Society.

3.2 SITE FILES REVIEW

Historic resources within the study area that are either listed, or eligible for listing on the National Register of Historic Places were also researched. All available site reports and journal publications relating to archaeological sites were researched for data specific to Van Cortlandt Park and the northern section of the Bronx. Finally, the data files at the New York State Museum (NYSM) and the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) were examined for information regarding recorded sites in and around the project area.

3.3 FIELD VISIT

A field visit was also conducted during which the current conditions were recorded and site photographs were taken.

3.4 ENVIRONMENTAL SETTING

Three known glacial periods were responsible for the creation of the present topography of the New York City area over the last one million years. Hills or moraines running north-south through the Bronx were formed by the buildup of glacial debris and the irregular erosion of the surrounding valleys and hills were a direct result of the retreating continental glaciers. Geologically, the borough of the Bronx lies within the Hudson Valley Region and is considered to be part of the New England Upland Physiographic Province, which is a northern extension of the Great Appalachian Valley (Schuberth 1968: 10, 74). The substratum is made up of "gneiss and mica schist with heavy, intercalated beds of coarse-grained, dolomitic marble and thinner layers of serpentine" identical to what underlies Manhattan Island (Scharf 1886:6-7).

Water from the melted ice floes was directed along the moraines in the area forming many rivers and creeks, including the nearby Tibbetts Brook, which flows just west of the project site (Figure 1). These watercourses have further eroded limestone belts still exposed between the glacial deposits, creating a varied landscape of hills and valleys. In low-lying areas, lakes and ponds were formed and in the locations with poor drainage, swamps and marshy areas covered the landscape.

Nineteenth and early twentieth-century topographic maps depict the project area as open farmland and woodland with Tibbetts Brook located to the west. The landscape of Van Cortlandt Park prior to 1889 included steep ridges with rock outcroppings, which remained wooded until they were cleared for timber harvests. The low areas of the park adjacent to Tibbetts Brook, flattened through the process of erosion, were most suitable for cultivation. A recent U.S.G.S. topographical map shows the project area as a park and recreation setting on a slight east west slope with elevations between 180 and 190 feet above sea level (Figures 1, 2).

The Mosholu Golf Course occupies 74 acres within Van Cortlandt Park. The present topography of the project site is partially the result of the alteration and shaping of the land in order to create the Golf Course greens in the before 1920 and again in the 1930s. At the southern end of the park there are two locations where low-lying dips collect water during times of intense rain saturation. The section of the course along Jerome Avenue (holes one through six) is level, largely open ground with isolated trees. The terrain slopes downward to the west, where it is more wooded. The course rises again to the north, and holes 12 through 18 are on fairly level terrain with several bedrock outcrops (Olmsted Center nd: 1). There is a wetland area in a bowl located between the third tee and the fourth, eighth, and fifteenth green (Ibid.).

3.5 PRECONTACT OVERVIEW

In order to fully understand the use of the project site through time it is necessary to develop a historical context for the Mosholu Golf Center and Driving Range site specifically. As defined by the National Park Service, "historic contexts provide a framework for the identification, evaluation, designation, and treatment of cultural resources associated with particular themes, areas, and time periods. Historic context-based planning permits recognition of individual properties as parts of larger systems. Historic contexts also help managers and others evaluate properties within their proper levels of significance. As such, they provide both a systematized basis for comparison and a comprehensive frame of reference. In so doing, "historic contexts provide cultural resource managers with a guide for rational decision-making" (Grumet 1990:18). The following discussions establish a contextual framework for both the precontact and historic eras pertinent to the project site.

3.5.1 Precontact Cultural Chronology

Much of the knowledge and understanding of Native Americans in the Hudson Valley area is derived from three sources: ethnographic reports, Native American artifact collections, and archaeological investigations. Archaeologists have devised a cultural chronology for the North American prehistory in which the Precontact era is divided into four main periods, the Paleo-Indian (c. 12,000-10,000 years ago), Archaic (c. 10,000-2,700 years ago), Woodland (c. 2,700-500 years ago), and Contact (500-300 years ago). Settlement types, subsistence, cultural systems and characteristic artifacts changed during each of these stages. In order to present a comprehensive overview of the precontact era and to fully evaluate the potential of recovering precontact cultural remains, each period will be reviewed with regard to 1) the environment during the time period, 2) the characteristics illustrative of the phase, and 3) any

recovered archaeological sites within the region. This examination was completed in order to assess the potential that indigenous groups would have had for exploiting the project locale in general as well as the actual project site.

Precontact sites are characterized by their proximity to a water source, fresh game, and exploitable natural resources (i.e., plants, raw materials for stone tools, clay veins, etc.). These sites are often divided into three types, primary (campsites or villages), secondary (food processing, tool manufacturing), and isolated finds (a single recovery of artifacts either lost or discarded). The examination of primary habitation sites indicates that they are often situated in locales that are surrounded by a number of exploitable resources. In addition, these sites are located in areas easily defended against both nature (weather) and enemies. Secondary sites are often found at the location of an exploitable resource (e.g., lithic quarry site).

3.5.2 Paleo-Indian Period

The earliest period of human occupation, the Paleo-Indian Period, is characterized by the presence of small bands of large- game hunters scattered over large areas of territory. Following the big-game animals that made up the major portion of their diet (e.g., mastodon, bison, caribou), these nomadic hunters moved seasonally across the landscape. Originally, these bands crossed the narrow land bridge from the Old World to the New, and although the population was small in number, they eventually spread over the wide expanse of territory now known as North America.

During the early Paleo-Indian Period the northeastern area of North America was evolving into a more favorable deciduous forest environment. Paleo-Indian sites have been recovered in well- elevated fertile areas situated close to a water source, which is typical of most precontact sites in all-subsequent phases. The remains of big-game animals have been recorded in large numbers on the west side of the river in Orange County (Ritchie 1994: 10-11). While this verifies that the locale surrounding the project area may have provided a food source for the Paleo-Indian hunters, no "kill sites" have been recovered. The fact that these sites have not been found may be the result of the flooding of coastal sites as the glaciers continued their retreat, or may be due to the estimated small site size during the early Paleo-Indian period.

With the exception of stone tools, artifactual material from this early period, has not survived well in the archaeological record. Extensive research indicates that the diagnostic artifact of the nomadic Paleo-Indian hunters was the fluted point. By the late Paleo-Indian Period, however, small leaf shaped or bifacial knives, scrapers, and borers had become part of the hunter's tool kit. As the climate became warmer, the environment in the Northeast became more advantageous to precontact peoples. In addition, small game animals more suited to the temperate environment replaced the larger fauna that were rapidly becoming extinct.

Following the final retreat of glacial ice, the area now known as the Bronx flourished with plants suited to arctic and tundra conditions. Eventually, the locale became a forest composed of deciduous trees and conifers. The fluctuating floral and faunal communities

eventually stabilized over the last 12,000 years, resulting in an environment often characterized as a climax forest, comprised of oak, hemlock, beech and chestnut trees.

While no Paleo-Indian sites have been recovered in this section of the Bronx, there are reports of sporadic finds of fluted points in the Croton Point area to the north in Westchester County (Crichton 1986). A number of archaeological investigations in Westchester County during the mid-1980s noted a distinct level of Paleo-Indian occupation (Crichton 1986). To the south, a small campsite, Port Mobil), was recovered in Staten Island (Ritchie 1994: 1, 3, 7).

3.5.3 Archaic Period

Data regarding the Archaic period indicates that the quantity of recorded archaeological sites is much larger then those dating to the Paleo-Indian Period, thus suggesting a significant increase in the population of native peoples. The Archaic period is also characterized by an overall shift in the environment, an expansion of the lithic tool kit, and the exploitation of defined territorial boundaries.

By the Early Archaic the environment in the Northeast had developed into a deciduous woodland forest. A gradual warming trend allowed new resources to establish themselves in the river valley. The Archaic peoples subsistence was "based on hunting, fishing and gathering of wild vegetables" (Ritchie 1994:31). They hunted smaller game animals (deer, rabbit, beaver, and wild turkey) and gathered a variety of wild plants, as well as exploited the marine environment (fish and shellfish gathering). Artifacts attesting to the expanded subsistence economy include fishing implements, and the mortar and pestle.

During the Period, the expanding exploitable resource base may have initiated the significant increase in population. The Archaic hunters also began exploiting a well-defined territory, often reoccupying favored sites. Because of the repeated occupation of these Archaic sites as well as the seasonal rounds made within specific territories, archaeologists have been able to recognize several identifiable cultural traditions in New York State (Ritchie 1994). The change in the number of sites recovered also indicates that Archaic peoples had a greater impact upon the landscape. Typical with all precontact sites, river valleys and coastal areas were the preferred locale for primary campsites. This environment supported the game, plants, and marine resources desired by Archaic peoples.

Additions to the tool kit of the Archaic hunter include the narrow bladed projectile point, grooved axe, and beveled adz. Archaeologist Robert Funk has suggested that the Laurentian, Susquehanna, and small-stemmed cultural traditions persisted in the Hudson River Valley during the Archaic period (Funk 1976: 250). In his reassessment of the distribution of Late Archaic (or Transitional Archaic 4,000-3,000 years B.P.) projectile points, Snow alternatively suggests that the Susquehanna tradition, represented by the Snook Hill, Perkiomen and Susquehanna Broad points, was dominant in the first half of the period and the Orient Complex in the latter (Snow 1980: 237). In the Hudson River Valley, where a number of Archaic sites have been investigated, Orient Points have been radiocarbon-dated to approximately 4,000 to 2,800 years B. P. To date, however, the exact sequence of cultural

traditions and representative complexes for the Archaic period is still undefined and a constant source of debate.

The Native American population had increased significantly in the Hudson River Valley region by the Late Archaic period. The variety of recovered sites from this period include rockshelters, open woodland camps, and secondary processing locations overlooking the various water sources. In a section of the Bronx's Riverdale Park, excavations were conducted on a series of precontact sites (DeCarlo 1990: 5). Archaeologists recovered a Late Archaic assemblage of oyster shells, fire cracked rocks, scrapers, bifaces, lithic debitage and diagnostic projectile points suggesting that this location may have been used for hunting and shellfish procurement from the Hudson River (Lenik 1992: 24).

3.5.4 Woodland Period

The Woodland Period is characterized by the introduction of pottery and horticulture, the appearance of large semi- permanent or permanent villages, and the establishment of clearly defined trade networks which marked the transition to a more settled culture. As with the earlier precontact periods, archaeological evidence suggests a marked preference for large-scale primary habitation sites within the vicinity of a fresh water source (e.g., rivers, lakes, streams, and ponds). In the majority of cases, secondary sites, where specific activities occurred (e.g., shellfish collecting and/or processing, butchering, and stone tool-making), were situated near the location of the exploited resource.

The first appearance of pottery was during the Early Woodland in New York State (c. 1000 B.C.) when crude, undecorated pottery, called Vinette 1, was first produced. This type of pottery has been recovered from sites on major waterways and tributaries. As the Woodland period progressed, regional variations in ceramic styles became common. Other innovations during the Woodland period reflect different cultural styles that archaeologists have been able to identify with specific native groups. A few of these include the introduction of the bow and arrow, pipe-smoking, and mortuary ceremonialism.

During the Woodland Period, fish and shellfish continued to provide a stable and reliable resource. In the smaller tributary rivers fish weirs were used for the recovery of large quantities of anadramous fish (Brumbach 1986:35). The introduction of horticulture in the New York area also signaled the advent of larger and more permanent settlements. Large tracts of land were cleared in locations nearby the primary settlements. Some of the native villages settled during this period were fortified and situated on "high ground." By the Late Woodland Period, Native paths were established connecting permanent villages, creating a trail to exploitable resources, and providing a link for the distribution of trade goods.

3.5.5 Known Precontact Sites in the Vicinity

Precontact archaeological sites have been recovered throughout the northwestern region of the Bronx. Primary sites (villages), secondary sites (tool manufacturing, food processing), and isolated finds (single items or features) have been investigated in the area surrounding Van Cortlandt Park. Some of the precontact sites identified within roughly two miles of the

present project location include several shell middens and precontact quartz processing sites (Beauchamp 1900:10; Lenik and Gibbs 1994: 55).

Several precontact sites have been identified within the confines of Van Cortlandt Park. A map depicting Native American sites in the Bronx indicates that the village called Keskeskick was at one time located in Van Cortlandt Park (Figure 3; Bolton 1972: 136; Anderson 1991: 4). Historical deeds from the seventeenth century also describe this village when it was sold to the early Dutch settlers of the Bronx (Grumet 1981: 19). Reginald Bolton's research further indicates that this "extensive and probably permanent village" was located close to the Van Cortlandt mansion, to the west of Van Cortlandt Lake and to the southwest of the present project site. The examination of documents also indicates that the area surrounding the mansion was where some of the village inhabitants had large planting fields (Grumet 1981: 15). Grumet's research also identified that another "Indian field" was located on the eastern side of the park, north of the current project site.

A native trail, identified by Reginald Bolton and confirmed by Robert Grumet's research, extended south from Westchester County along the western boundary of Van Cortlandt Park (Figure 3). This trail, which traveled roughly north-south along what is now Broadway (Old Post Road), curved eastward into the park near its southwest corner before turning south again following the path of the present day Deegan Expressway (Bolton 1972: 136; Grumet 1981: 69). The trail likely gave access to the many primary and secondary sites located throughout the park.

The earliest archaeological exploration within Van Cortlandt Park was conducted in 1890 by J. B. James, who recovered pottery, fire pits, lithic material, burials, and other traces of the long-term occupation of this locale (Anderson 1991: 4; Bolton 1972: 141; Storch Associates 1986: 36). Additional material has been recovered from sites all over the park including storage pits, pottery fragments, shell middens, burials, and lithic material (Bolton 1934: 141; Tieck 1968: 3; Skinner 1915: 55).

More recent investigations within Van Cortlandt Park (NYSM #2387, #2823, #4057, and #7727) have identified a camp, village, shell midden, and campsite in locales throughout the park. During the early 1990s several archaeological investigations were conducted within the park. Bankoff and Winter (1991) recovered a storage pit containing shell, ash, and lithic material. The archaeological examination of the Chapel Farm site (A005-01-00079, NYSM #7729) identified a precontact lithic workshop nearby in Riverdale (Kearns and Kirkorian 1991). Arthur C. Parker describes the two sites closest to the current project area NYSM #7727, within Van Cortlandt Park, and NYSM #2837, east of the park and the Major Deegan Expressway, as precontact campsites.

3.5.6 Precontact Archaeological Potential

Documentary research found that the project site is in an area of high sensitivity for precontact resources. The site file search and assessment of sensitivity conducted at the New York State Museum (NYSM) and the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) reported eight known precontact sites within a two-mile

radius of the proposed facility. The well-documented presence of a nearby native pathway and the permanent village of Keskeskick within the park indicates that the village site may have been extensive and/or occupied over a long period of time. The physiographic characteristics of the park, together with the information extracted from the documentary record and the number of precontact sites explored archaeologically suggests that Native American peoples may have exploited the proposed project site.

The project area was used as farmland and later parkland during the nineteenth and twentieth centuries. Topographic maps that predate the creation of the Golf Course do not provide adequate details necessary to determine the changes that were effected by the construction of the Golf Course. The New York City Department of Parks archives at the Olmsted Center only maintain topographic maps generated after the Golf Course was already in place (1936, 1982). These maps document minimal changes to the landscape after the Golf Course existed. A review of topographic maps dating from 1874, 1891, 1911, 1936, and 1982 provide little detail on the topographic changes that the project site experienced with the creation of the Golf Course, which would have been when the most extensive landscape changes were made (Viele 1874; U.S.G.S. 1891, Figure 6, 1911; City of New York Department of Parks 1936, 1982). However, they do show subtle changes to the landscape that took place between 1936 and 1982. For example, tees have been filled to raise elevations, and holes have – in some cases – been lowered.

Twentieth century topographic maps document the locations of existing buried irrigation lines, which would have disturbed discrete portions of the landscape (City of New York Department of Parks 1982). A comparison of a 1959 irrigation plan and the 1982 topographic map of the Golf Course documents the fact that the locations of irrigation pipes have changed over that 30 year period (City of New York Department of Parks 1959, 1982). Much of the proposed Water Treatment Plant project site has been disturbed by the installation of these pipes, although disturbance is limited to about a one-foot wide trench where the pipes were laid (Figure 7).

The Geotechnical Report for the project site documents generalized and more specific existing subsurface conditions (City of New York DEP et al 2000, Vol. 1). The report describes the surficial soils as lying between 0-34 feet, and generally composed of silty sand with sandy silt, boulders, and some organic matter (Ibid.:3). Beneath this, glacial soils have a medium dense to dense well-graded silty sand with gravel, cobbles and boulders. In some locations the report states that "imported fill or reworked till may overlay the till" (Ibid). Pockets of dense saprolite (which is soft, partially decomposed rock rich in clay and remaining in its original place) as thick as 10 feet are noted above some sections of bedrock, and underlying bedrock depth varies between 4 to 40 feet, averaging about 15 feet.

A total of 51 soil borings were performed in the project site (Figure 8). Most contained about three inches of topsoil, and between two and four feet of silty sand with organic matter (Appendix A). While the presence of organic matter in this uppermost soil zone may indicate some degree of disturbance (perhaps caused by the uprooting of trees or by other such actions), it is not a guarantee of it (Eric Acs, Geologist, Metcalf & Eddy, personal communication, April 27, 2004). Beneath the upper level is a sub-stratum that is typically

comprised of brown silty fine sand with sand and silt (Boring MG-B32-99). In some locations this strata contains gravel, cobbles, and boulders (MG-B40-99). Nothing in the boring logs definitely indicates that levels above the glacial till have been disturbed, despite the statement to this effect in the Geotechnical Report (City of New York DEP et al 2000 Vol. 1: 3). In contrast, the borings do not portray, with any degree of accuracy, disturbed strata. The geologists did note several mounds at the site, which soil borings indicated were not natural (Eric Acs, personal communication; see Boring MG-B30-99). It is quite possible that these mounds were constructed as part of the original Golf Course

The areas of known disturbance, such as the location of the clubhouse, the parking lot that has been graded, the locations of utility lines, and the routes of the irrigation pipes, have not retained potential archaeological sensitivity. Furthermore, large portions of the project site have - in all likelihood – experienced topographic changes and landscaping with the original creation of the Golf Course. However, no documentation on the original Golf Course's construction was available. Therefore, in light of the fact that extensive disturbance could not be documented for much of the project site, it is assumed that there may be areas that have the potential to contain precontact deposits.

3.6 CONTACT PERIOD

Documentary and archaeological sources have provided much of what is known about the Contact Period. Archaeologists and historians have carefully examined historic documents in order to understand the native cultures that were living along the Hudson River when Europeans first arrived. Legal documents and ethnohistorical accounts and have provided valuable details about the past lifeways of native peoples. Because information about the settlements, appearance, and behavior of ancient peoples cannot be reconstructed from the recovery of a few artifacts, these additional resources have provided the means by which archaeologists can assemble more complete data about past cultures.

When the first Europeans arrived it was noted that Native American groups living along the shores of the Hudson River had developed complex group dynamics. The first contact between Europeans and Native Americans occurred when Henry Hudson docked his vessel near the present day Yonkers, just north of the project site in Westchester County. Initial trade between the two cultures began along the Hudson River before moving inland. Furs and wampum were used as a medium of exchange for European goods. In 1625, Johannes de Laet, one of the early travelers to the area wrote that the natives he encountered were "divided into many nations and languages" (Bolton 1972: 16). Descriptions like this were often repeated by many. While initial contact was primarily peaceful, large-scale conflicts erupted following the arrival of Governor Willem Kieft in 1638. Kieft was notorious for his harsh policies against the local tribes. By the mid- to late seventeenth century, many of these peoples were subsequently decimated by local hostilities and European-introduced diseases.

Historic documents indicate that when the first Europeans arrived there were a large number of native peoples occupying the locale along the Hudson River in the northwest Bronx. Early historical records (deeds, treaties, and maps) identify the indigenous people that inhabited

this section of New York City. One early document, the Hendricks Map of 1616, depicted a group called the Wikagyl, subsequently identified as the Wiechquaesgeek, as the inhabitants of the northern Bronx and lower Westchester County (Bolton 1934: 128; Grumet 1981: 59-60). The Wiechquaesgeek were able to exploit the rich environment of the northwest Bronx between the Hudson and Bronx Rivers, including the area just north of the site identified as the "Indian Field" (Figure 3). The area provided an optimal locale for deer, raccoon, fox, rabbit, and waterfowl. Historic documents indicate that many of the surviving native peoples eventually sold their land or moved to the north (Grumet 1981: 60-62; Ruttenber 1982).

3.7 HISTORICAL OVERVIEW

3.7.1 Historical Chronology

3.7.1.1 Colonial Period

The initial European settlement of the New York City area was marked by misunderstandings and hostilities between the native groups and the Dutch colonists. Following a short but bloody "war," which ended in 1645, Adriaen van der Donck purchased 24,000 acres of land from the Wiechquaesgeek Indians along the Hudson River. This large tract of land, granted to him by the Dutch prior to his purchasing it from the sachem Tacharew, encompassed what is now Van Cortlandt Park (Anderson 1991: 12; Pons 1994: 2). Much like the earlier Dutch Settlers, van der Donck took advantage of the areas already cleared by the Native Wiechquaesgeek and established a farm that included large corn fields in the locale of what is now the Van Cortlandt Mansion. Van der Donck maintained a good relationship with the native inhabitants until his death in 1655. Over ten years later, his widow and her second husband sold a large portion of land (most of the south half of present day Van Cortlandt Park) to her brother, Elias Doughty, who in turn sold the land to William Betts and his son-in-law George Tippett in 1668. The water source in the center of the property eventually became known as Tibbett's Brook, an alteration of the Tippet family name.

In 1670, the property was again sold to Frederick Philipse, who had amassed a large estate extending from the north Bronx up through much of Westchester County. Large sections of the Manor of Philipsburgh, located in what was then Westchester County, were leased to tenants. Jacobus Van Cortlandt purchased fifty acres of land from his father-in-law Frederick Philipse in 1699. The property then became known as Van Cortlandt Manor. Eventually, Tibbetts Brook, located to the west of the present project site, was dammed to create present day Van Cortlandt Lake. It was there that in c. 1700 Stephanus Van Cortlandt constructed a sawmill. A large manor house, which is still standing, was built near the lake in 1748 by Frederick Van Cortlandt (Jenkins 1911: 352). Nearby, the family vault was constructed on what has become known as "Vault Hill." Both the mansion and the vault are located in the southwestern portion of the park, removed from the present project site.

3.7.1.2 Revolutionary War

During the American Revolution, Van Cortlandt Manor became the center of action on several occasions. In fact, Agustus Van Cortlandt hid the municipal records of the City of New York inside the family vault in 1776. In an effort to recapture Fort Independence, American soldiers marched south from Yonkers to the high ground above the Van Cortlandt house on January 18, 1777. Although this attempt failed, George Washington used the main house for his headquarters and ordered his troops to cut down much of the forage in the fields surrounding the manor in order to prevent surprise attacks by British soldiers.

A major battle took place within the confines of the park during the following year. A small group of American soldiers accompanied by several Stockbridge Indians sympathetic to the American cause attacked a battalion of British troops on August 20, 1778. After forcing a retreat, they were ambushed by British, Tory and Hessian troops. The small band was driven across Van Cortlandt's woods to what is now the eastern portion of the park. Thirty-seven of the Indians, including their leader Ninham, were slaughtered near what was thereafter called Indian Field (Jenkins 1912: 162-164; Storch Associates 1986: 44). The site of the ambush is said to be near the corner of East 233rd Street and Van Cortlandt Park East (Pons 1994: 13). The remains of these peoples were buried a few days later near the site of the ambush, north and clearly outside of the present project site.

3.7.1.3 Nineteenth Century

The review of nineteenth century maps indicates that much of the northwestern area of the Bronx was still being used as farmland and woodland. The population of New York City was rising steadily during the early part of the century. Water resources and transportation networks became priorities for city officials. In order to provide an ample supply of water to the populace, resources in Westchester County were explored. It was determined that the Croton River would be able to provide enough water via an aqueduct to insure an abundant water supply. Acting on this notion, the Croton Aqueduct Commission was established in 1833. Over the next nine years, construction plans were established and the aqueduct was completed in 1842. In order to build the aqueduct a large tract of land was cleared along its route. Now known as the "Old" Croton Aqueduct, it ran north-south paralleling the Hudson River. A portion of this aqueduct runs through Van Cortlandt Park and is east of Tibbetts Brook, and well west of the Mosholu WTP project site.

By the second half of the 19th century, the Van Cortlandt Park area contained large estates and farmland, including the Augustus Van Cortlandt and John Dickinson Estates. It was at this time that these estates began to be subdivided into smaller building lots. By 1851 a house appeared to have been built off of what is now West Gun Hill Road, at the southwestern corner of the project site (Sydney and Neff 1851). At that time the house was owned by A. Berrian. The structure was still standing in 1853, although no ownership association was provided (Dripps 1853).

By 1868 much of the former Van Cortlandt property was divided into smaller parcels and most of the project site was vacant and owned by the Estate of J. Trier. Land to the west of the project site was divided between two owners, G. and J. Dickinson. Land within the project site also belonged to J. Williams, E. Johnson, and H.W. Law. R. W. Dickinson

owned the only dwelling within the project site that was identified at the southwestern corner of the project, but otherwise the remainder of the site was vacant (Beers 1868; Figure 4).

A comparison of the 1868 land owners (Figure 4) to the 1870 Census listings for the tracts along what is now West Gun Hill Road demonstrates that the R. W. Dickinson house (which is the only one that falls within the project site) was not owner-occupied at that time. The following table details land ownership and occupancy:

| Lot Owners (1868 Beers Atlas) | Occupants (1870 Census) |
|-------------------------------------|---|
| J. Dickinson | John Dickinson (56) farmer (and family) 2 laborers 2 servants |
| R.W. Dickinson **(in project site) | George Sacklar (38) farmer (and family) John Sacklar (40) farmer (and family) |
| E. Johnson | E.A. Johnson (56) professor (and family) 2 servants |
| H.W. Law | Henry Law (45) Book Keeper (and family) 1 boarder |

Both John Dickinson (not within the project site) and his neighbors George and John Sacklar (within the project site) are listed in the 1870 census as farmers. It may be that the Sacklars were tenant farmers working for the Dickinsons, as they were living in the house owned by R.W. Dickinson. The Dickinsons held large tracts of land in the immediate vicinity (Beers 1868; Figure 4; Bromley 1882).

The 1874 Viele topographic map shows that much of the land was a cleared meadow during the late nineteenth century (Figure 5), suggesting it may have served as farm land. Two structures are shown just south of the proposed project site boundaries, and the Berrian/Dickinson house still appears either within or directly adjacent to the project site (Viele 1874). The house was razed sometime between 1882 and 1893 (Bromley 1882, 1893). A search of census records and county directories could not establish occupancy of the dwelling, other than the Sacklars in 1870 (U.S. Census 1860, 1870, 1880; Gopsill 1866; Curtin 1868; Shaw 1878).

3.7.1.4 Croton Aqueduct

The intense demand for water in New York City had exceeded the potential of the Old Croton Aqueduct by 1875 and plans were once again formulated to build a second, larger, aqueduct from Croton to New York City. The segment of the New Croton Aqueduct that flows through Van Cortlandt Park is a masonry brick-lined tunnel found at an average depth of 125 feet. This new conduit that runs partially beneath the project site was completed in 1891. An 1891 Atlas of the Hudson River Valley depicts the Old and New Croton Aqueducts as well as the boundaries of the newly formed Van Cortlandt Park. The only buildings shown are the historic Van Cortlandt mansion and surrounding structures, which are well removed from the Croton WTP site.

3.7.1.5 Railroads

A third construction project that affected the terrain of Van Cortlandt Park was the introduction of the New York City and Northern Railroad Line in 1872. The line, completed in 1880, provided a link between New York and Boston. The route of the railroad, with its many bridges, passed directly through the eastern portion of the park, parallel to Tibbetts

Brook, and altered the drainage patterns within the park, creating a series of marshy areas. Passenger service on this railroad, by then called the Putnam Line, ceased by 1958.

3.7.1.6 Van Cortlandt Park Development

The last Van Cortlandt moved out of the mansion house in 1888. One year later, a large section of land, including the former Van Cortlandt Manor and the parcels encompassing the present project site, was acquired for public parkland in the northwestern section of the Bronx. At the time of acquisition, half of the acreage within the park was meadowland and the other half woodland. Only approximately 40 acres was identified as vegetable gardens. That same year the mill, located within the park, ceased operation and the Parade Ground near the mansion house was opened to the public.

During the late nineteenth and twentieth centuries most of the physical changes made to the park were near the locale of the Van Cortlandt house and lake. The southern and central areas of the park were used for picnics, outdoor games, and the 1895 creation of the first municipal Golf Course, the 55-acre Van Cortlandt Links Golf Course (Storch Associates 1986: 73). As the popularity of the sport increased, the original nine-hole course was replaced by a larger 18-hole course in 1899 (Ibid). By that date the Van Cortlandt Links covered 120 acres. Increased congestion encouraged the New York Golf Club, which had 300-400 members patronizing the Links, to propose the construction of a second golf course near the foot of Gun Hill Road (Ibid: 74). Although this new building was not constructed, the idea of utilizing the area near Gun Hill Road persisted.

3.7.1.7 Mosholu Golf Course

In 1904, a new "advanced" golf course was laid out in Van Cortlandt Park to alleviate overcrowding on the Van Cortlandt Links course (Storch Associates 1986: 75). This course may have been constructed in the location of the present Mosholu course, but this is not confirmed (Ibid.). Only two years after the advanced course was established, a new permanent golf course was proposed for the project site location. However, it was not until 1914 that the Mosholu Links was built on the project site (Ibid). The original course had "parallel fairways separated by single tree rows" (Ibid.:91). Currently, the Mosholu Golf Course occupies 66 acres in the southeasterly corner of Van Cortlandt Park.

In April 1928 plans were drawn up for the creation of a clubhouse at Mosholu Golf Course. The *Plans for Golf House and Comfort Station at Mosholu Links*, designed by John R. Brinley, a relatively unknown architect, show that the clubhouse was built with a partial basement, and was hooked up to public sewer lines. Shortly thereafter, the Golf Course was redesigned. The layout of the course that exists today was created in the mid 1930's during a rebuilding of the course (Olmsted Center nd: 1; City of New York Department of Parks 1936). A 1942 Plan for New Planting and General Park Rehabilitation prepared by the U.S. Works Progress Administration (WPA) indicated that the Golf Course was to undergo selective forestry, the restoration of shrub areas, and lawn renovation (Olmsted Center 1942). However, details of the locations of these activities were not provided. Pathways around the clubhouse were graded and gutters were installed along their edges (Ibid.). The parking lot

was resurfaced, which included regrading the area north of the clubhouse to the road. No depth of grading was recorded.

In 1971 the clubhouse was extensively altered, with Daniel Chait serving as architect. At that time the building's piers and footings were reinforced, and substantial structural additions were made to three sides - the east, west, and front (Olmsted Center 1971; Photographs A-C). These additions were built with a sub grade slab foundation, over a 6" layer of well-compacted porous fill placed over soil.

Throughout the twentieth century, a number of major roadways were built beginning in 1931 with the Grand Concourse Extension, later called the Mosholu Parkway Extension. This parkway constitutes the western boundary of the Croton WTP site. This was followed by the Henry Hudson Parkway in 1935 and the Major Deegan Expressway in 1948.

3.7.2 Known Historical Sites in the Vicinity

Although no archaeological work has been undertaken within the Croton WTP site, nearby excavations have been conducted by both avocational and professional archaeologists on sites that have been dated to the historical period. In 1910, workmen excavating for a new sewer near the Van Cortlandt Manor Mansion uncovered a foundation for what may have been Van der Donck's house. The subsequent excavation revealed a large amount of domestic debris dating to the seventeenth century. Archaeological excavations in other areas surrounding the Manor house have also been conducted.

The historic Van Cortlandt Mansion, now a museum, and Vault Hill are in the southwestern section of the park and therefore well outside of the proposed Croton WTP site. When this area was part of Philipsburgh Manor and Van Cortlandt Manor, large portions of these estates, including the park property, were likely leased to tenant farmers. Small farmhouses with their associated outbuildings and cultivated fields were likely present up until the Revolutionary War. Some of these dwellings may have been situated in the northeastern section of the park in the location of the former native planting grounds. The woodland in the northern area of the park would have provided timber and possibly small game for the inhabitants of the Manor.

The Mosholu Golf Course is an important feature within Van Cortlandt Park. While no landmarked buildings are located on the site, the Mosholu Golf Course Clubhouse is present. Although not eligible for listing on the National Register as an individual structure, this building is of historical interest. The structure is reminiscent, on a small scale, of the grand clubhouses erected at private suburban golf courses. The building is a Colonial Revival structure built of brick with a wood trim. The most notable features of the building are the entrance portico, with its eight Roman Doric columns, and the gables, which are pierced by Palladian windows – but these architectural elements were not original, but were added to the structure in 1971.

The main body of the Mosholu Golf Course in Van Cortlandt Park (1888) is located to the west of Jerome Avenue. On the east side of Jerome Avenue, is Woodlawn Cemetery. This historic cemetery has numerous extravagant mausoleums, memorials, and tombstones; several affluent citizens of New York are interred here. Woodlawn is also noted for its elaborately-groomed grounds and manicured lawns. Jerome Avenue, which was a regulated road at the time the nearby Woodlawn Cemetery was established, serves as a buffer, physically separating the cemetery and the Golf Course.

3.7.3 Historical Archaeological Sensitivity

In 1868 the Berrian/Dickinson house stood within the southern edge of the project site. The dwelling was built prior to 1851 and was razed between 1882 and 1893. While remnants of the building's foundation may still remain, it is possible that landscaping within the park has disturbed its location. More likely, shaft features associated with the structure (e.g., wells, cisterns, and privies) remain undisturbed somewhere near the dwelling's location. These shaft features frequently contain artifactual material related to the occupants of the dwelling. Therefore, the southwestern portion of the project site has the potential for subsurface shaft features associated with the Berrian/Dickinson structure that was occupied by the two Sacklar families in 1870 (Figure 9).

4 EXISTING CONDITIONS

The site of the proposed Croton WTP is situated east of the NCA (1884-1890) in the Mosholu Golf Course at Van Cortlandt Park. The parcel is located between Jerome Avenue and the Mosholu Parkway.

4.1 ARCHAEOLOGICAL RESOURCES

Precontact Archaeological Resources. Documentary research found that the project site is in an area of high sensitivity for precontact resources. The site file search and assessment of sensitivity conducted at the NYSM and the NYSOPRHP reported eight known precontact sites within a two-mile radius of the proposed facility. The well-documented presence of a nearby native pathway and the permanent village of Keskeskick within the park indicates that the village site may have been extensive and/or occupied over a long period of time. The physiographic characteristics of the park, together with the information extracted from the documentary record and the number of precontact sites explored archaeologically suggests that Native American peoples also likely exploited the proposed project site.

The project area was used as farmland and later parkland during the nineteenth and twentieth centuries. Therefore, much of this locale was not altered by widespread development, but instead was altered by landscaping. Specific locations have experienced subsurface impacts with the construction of the clubhouse, grading for the parking area, and the installation of utilities and irrigation lines. Outside of the areas of documented disturbance, the project site may be sensitive for precontact resources (Figure 9).

4.2 HISTORICAL RESOURCES.

A dwelling belonging to A. Berrian in 1851 and R.W. Dickinson in 1868 (Sidney and Neff 1851; Dripps 1853; Beers 1868, Figure 4) stood at the southeastern corner of the project site. The dwelling was razed sometime between 1882 and 1893 (Bromley 1882, 1893). The dwelling was occupied by two related families in 1870, probably renters, who were farmers. Although the location of the dwelling may have been disturbed, in part, by landscaping for the Golf Course, shaft features associated with the dwelling may have remained undisturbed. Therefore, the southwestern section of the project site is potentially sensitive for subsurface shaft features associated with the dwelling (Figure 9).

According to the current design plan, the proposed Croton WTP would be located to the east of the NCA and the Mosholu Parkway. The documented aqueduct is a functioning component of the city's water supply system.

Existing facilities at the site include a clubhouse, maintenance facility, driving range, nine-hole golf course, and a parking lot for approximately 75 cars. These facilities would be replaced on a temporary basis during construction and on a permanent basis after construction.

The proposed Croton WTP site is also visually and physically separated from the known historic structures in the Park, such as the Van Cortlandt Mansion, which is located approximately 3/4 mile to the west. Although Van Cortlandt Park itself is historically important, no formal process has been undertaken to definitively establish landmark status. However, a detailed account of the park's history, structures, and existing conditions in 1986 was prepared by Storch Associates, Westbury, New York, and is on file with the New York City Landmarks Preservation Commission (LPC).

The Olmsted Center archives (New York City Department of Parks, Map Division) retains records of some of the alterations made to the Mosholu Golf Course and the Clubhouse structure. This includes the original architectural drawings of the Clubhouse, which was designed was built in 1928. Plans from the Olmsted Center also indicate that in 1971 major structural additions were made to three of the facades, including the front elevation (Photographs A-C). Due to the lack of integrity, the structure is probably not eligible for listing on the National Register of Historic Places. The additional data collected for this report argues against the need to photo-document the clubhouse, but the review agency has that option. However, it would be very difficult to capture any of the remaining look and feel of the 1920s clubhouse due to the substantial 1971 enhancements to the front and sides of the building.

5 POTENTIAL IMPACTS

5.1 ARCHAEOLOGICAL RESOURCES

The proposed construction of the Water Treatment Plant may potentially impact precontact archaeological deposits.

Temporary construction parking, hauling roads, and staging areas that are outside of the footprint of the Croton WTP may have a potential to impact both precontact and historical archaeologically sensitive areas.

5.2 HISTORICAL RESOURCES

During the years that construction is underway, there would be a temporary loss of the golf facility at the Mosholu Golf Course (ca. 1914). The Mosholu Golf Course Clubhouse would also be demolished and replaced. This structure is probably not eligible for listing on the National Register due to extensive modifications in the 1970s.

Construction would take place above a National Register-eligible feature, the NCA. The Aqueduct is still in active use and a connection to and rehabilitation of a portion of the Aqueduct would be necessary. The rehabilitation of the Aqueduct would be considered an impact.

Construction for the proposed Croton WTP would be visually and physically separated from the other historic and/or landmarked structures within the park or the surrounding area (e.g., Van Cortlandt Mansion, Vault Hill, Woodlawn Cemetery). Therefore, no significant construction related impacts to existing historic structures are anticipated.

All temporary construction parking, hauling roads, and staging areas would have only a temporary visual impact on the existing parkland.

6 CONCLUSIONS AND RECOMMENDATIONS

The Phase 1A research, which included documentary analysis, cartographic research, informant interviews, site file searches, and a walkover survey, concluded that the project site might have the potential for the presence of precontact cultural material. Furthermore, one possible historical dwelling was noted in the southwest corner of the project site on historic maps. The Mosholu site has the potential to contain archaeological resources associated with this dwelling.

Although there has been ground disturbance and a continuously evolving recreational landscape, there is still a potential precontact and historical archaeological resources to have remained undisturbed. Consequently, if the Mosholu Site were selected for the WTP, a Phase 1B investigation would be conducted by a pre-qualified specialist in accordance with the New York Archaeological Council's Standards (1994) to verify the presence or absence of archaeological deposits. A protocol for the Phase 1B field investigation would be prepared under separate cover, and would be submitted to SHPO. The Phase 1B field investigation would occur prior to any construction-related excavation on the site. These

investigations and the subsequent mitigation of any findings would avoid any significant adverse impacts to archaeological resources.

6.1 CONCLUSIONS

6.1.1 Archaeological Resources

Documentary research found that the project site is in an area of high sensitivity for precontact resources. The site file search and assessment of sensitivity conducted at the NYSM and the NYSOPRHP reported eight known precontact sites within a two-mile radius of the proposed facility. The physiographic characteristics of the park, together with the information extracted from the documentary record and the number of precontact sites explored archaeologically suggests that Native American peoples also likely exploited the proposed project site.

The project area was used as farmland and later parkland during the nineteenth and twentieth centuries. Therefore, much of this locale may not have been altered by widespread development. The introduction of the two aqueducts, railroad tracks with associated bridges, and paved roads and/or paths have transformed many areas within the park. More recently, the introduction of the initial 1904 "advanced" course and the 1914 Mosholu Golf Course, with the associated extensive land manipulation, changed the physical appearance of the project site considerably. The installation and relocation of irrigation pipes further disturbed the landscape. Regardless, outside of the areas of documented disturbance, the project site may be sensitive for precontact resources (Figure 9).

6.1.2 Historical Resources:

Documentary research also indicates that there was at least one historical structure in the project site in the second half of the 19th century and therefore, the project site has the potential to yield historical archaeological resources. A dwelling was built at the southwestern corner of the project site sometime prior to 1851 and was razed between 1882 and 1893. Potential shaft features associated with the dwelling may lie within the project site (Figure 9).

According to the current design plan, the proposed WTP would be located to the east of the New Croton Aqueduct, which is a functioning component of the city's water supply system. Construction would entail connections with the buried New Croton Aqueduct, a National Register eligible structure. The Aqueduct is still in active use and rehabilitation of a portion of it would be necessary. The rehabilitation of the Aqueduct would be considered an impact.

The proposed WTP site is also visually and physically separated from any known historic structures in the Park, such as the Van Cortlandt Mansion, which is located approximately 3/4 mile to the west. Although Van Cortlandt Park itself is historically important, no formal process has been undertaken to definitively determine its eligibility for landmark status. However, a detailed account of the park's history, structures, and existing conditions in 1986

was prepared by Storch Associates, Westbury, New York, and is on file with the New York City Landmarks Preservation Commission (LPC).

The project will entail removing and rebuilding the Mosholu Golf Course Clubhouse that dates to 1928. However, this building does not appear to be eligible for listing on the NR due to extensive modifications in the 1970s.

6.2 RECOMMENDATIONS

6.2.1 Archaeological Resources

Although there has been ground disturbance and a continuously evolving recreational landscape, there is still a potential precontact and historical archaeological resources to have remained undisturbed. Consequently, if the Mosholu Site were selected for the WTP, a Phase 1B investigation would be conducted by a pre-qualified specialist in accordance with the New York Archaeological Council's Standards (1994) to verify the presence or absence of archaeological deposits. A protocol for the Phase 1B field investigation would be prepared under separate cover, and would be submitted to SHPO. The Phase 1B field investigation would occur prior to any construction-related excavation on the site. These investigations and the subsequent mitigation of any findings would avoid any significant adverse impacts to archaeological resources.

6.2.2 Historical Resources

The Mosholu Golf Course Clubhouse, although probably not eligible for listing on the National Register as an individual structure, is of historical note. The structure is reminiscent, on a small scale, of the grand clubhouses erected at private suburban golf courses. The building is a brick Colonial Revival structure built in 1928. The most notable features of the building are the entrance portico and the gables, but these were added in 1971. While photo-documentation of the existing building is not necessary, it is at the discretion of the review agency. However, it would be difficult to capture the look and feel of the 1928 clubhouse due to the 1971 additions.

The proposed Croton WTP would be visually and physically separated from any historic and/or landmarked structures within the park or the surrounding area (e.g., Van Cortlandt Mansion, Vault Hill, and Woodlawn Cemetery). Therefore no significant impacts to existing historic structure are expected.

Construction would entail connections with the buried NCA, a National Register eligible structure. The Aqueduct is still in active use and rehabilitation of a portion of it would be necessary. The effect of these measures on the historic facility would be addressed in subsequent environmental documents. Due to the eligible listing of the NCA, prior to construction, the Secretary of the Interior's Standards for the Treatment of Historic Properties would be consulted to retain the historic character of the structures. This consultation would ensure that any future proposed work would not cause any significant adverse impact to the historic structures.

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 $F_{\rm content}$ U.S.G.S. Topographic Map. Yonkers, NY Curchample

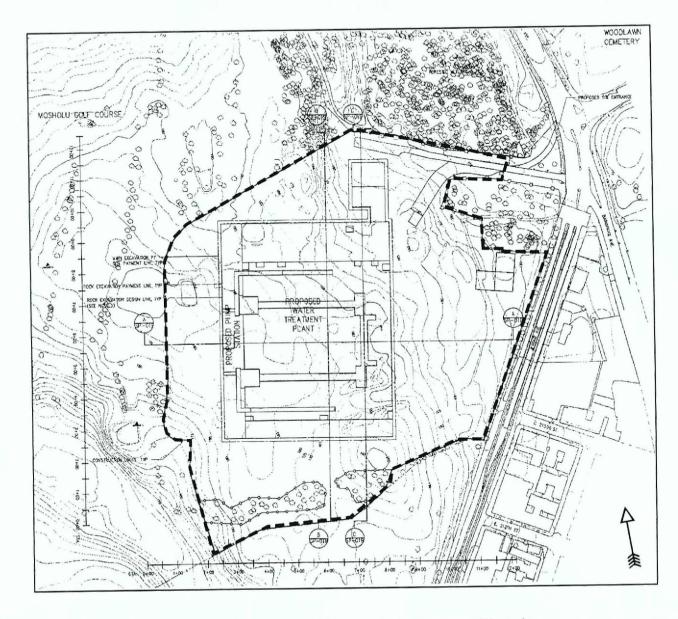


Figure 2: Proposed Mosholu Golf Course Water Treatment Plant site. Source: Metcalf & Eddy and New York City DEP.

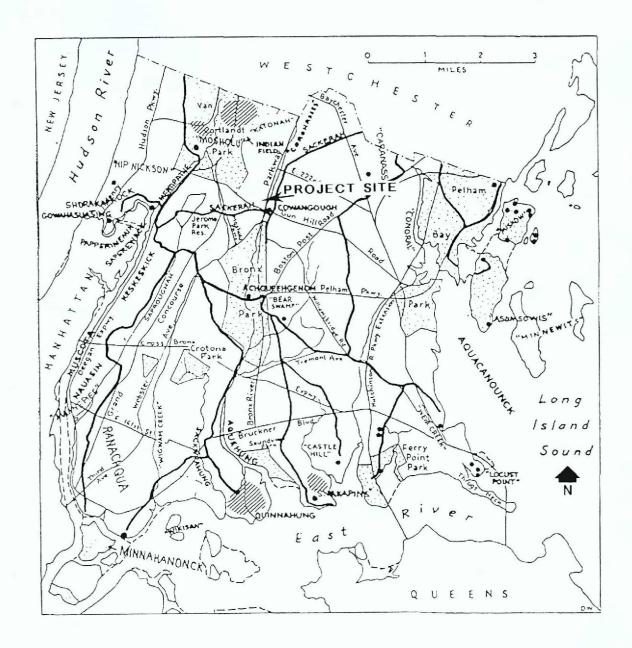


Figure 3: Grumet's *Native American Place Names in New York City*, 1981. The Bronx.

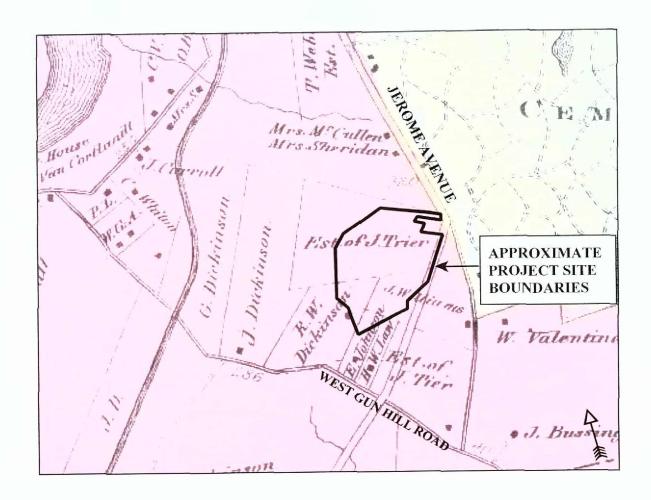


Figure 4: Beers *Yonkers, New York,* 1868. No Scale.

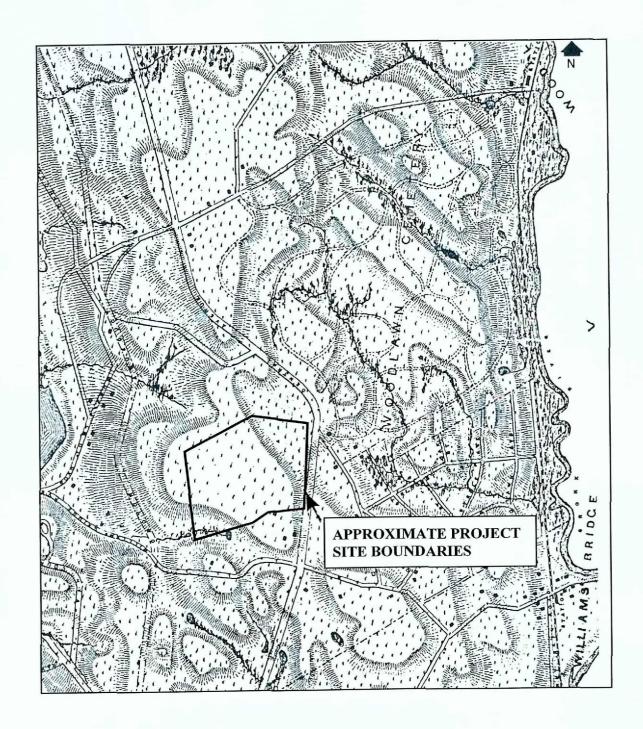


Figure 5: Viele's Topographical Atlas of the City of New York, 1874.

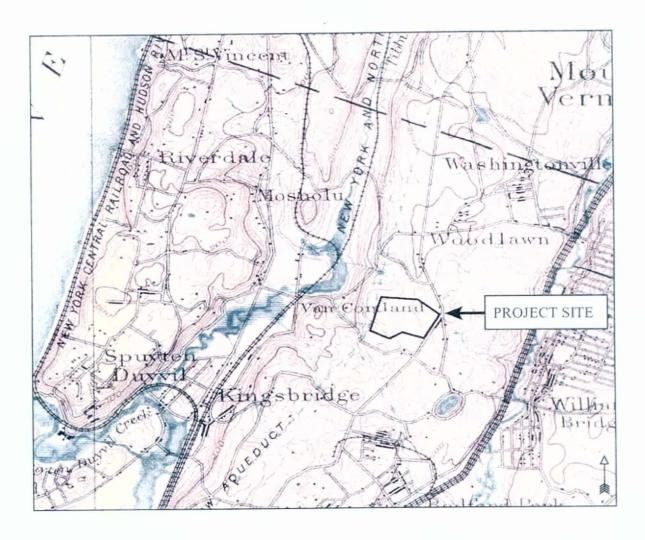
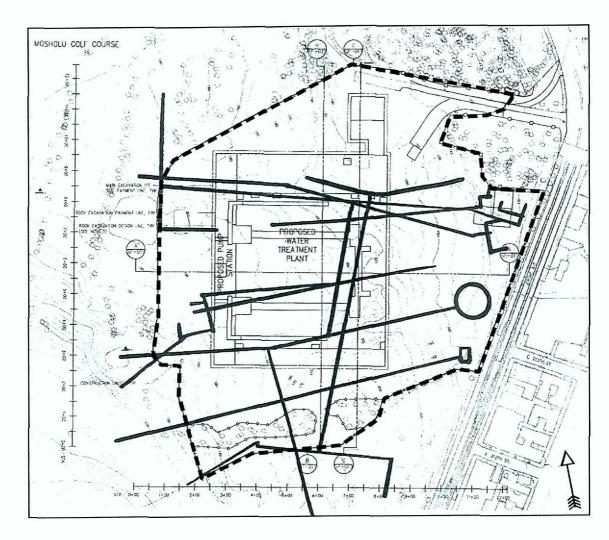


Figure 6: U.S.G.S. Harlem N.Y.- N.J. Quadrangle, 1891. 15 Minute Series. No Scale.



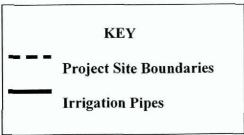
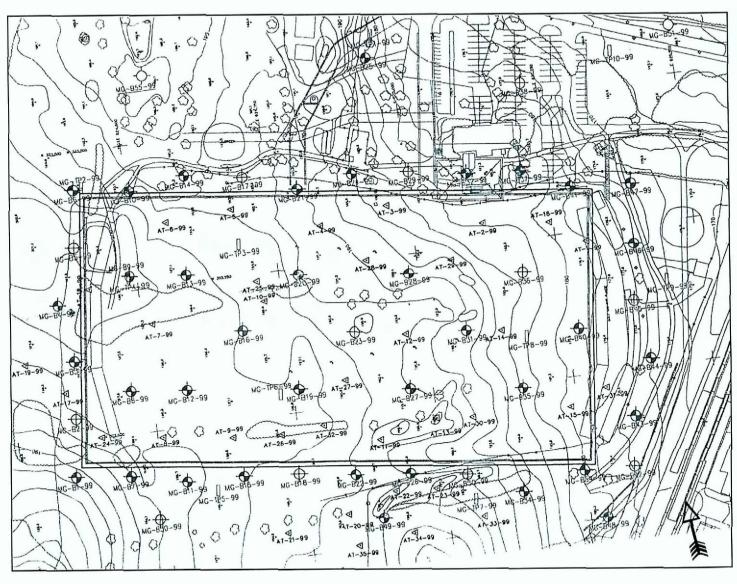
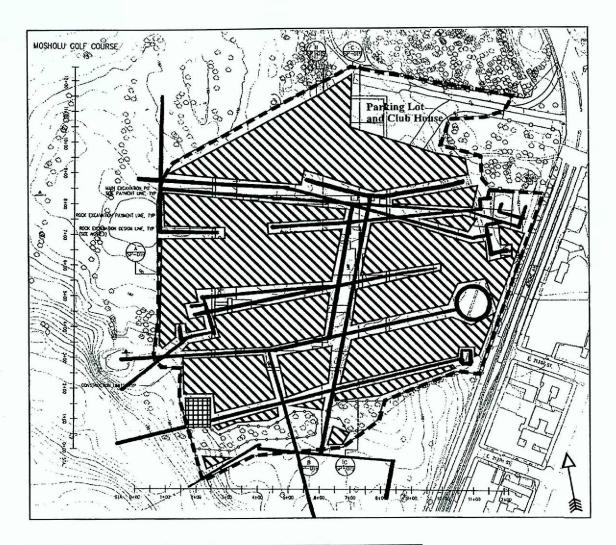


Figure 7: Proposed Mosholu Golf Course Water Treatment Plant Site with 1959 and 1982 irrigation pipe locations superimposed.



8: Soil Boring Locations, Mosholu Golf Course Water Treatment Plant Site, 2000.
Source: City of New York DEP, Metcalf & Eddy of New York, Inc. and Hazen and Sawyer, P.C.



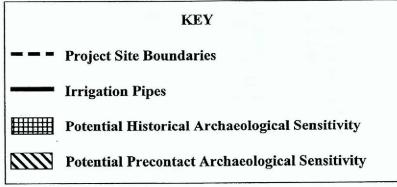


Figure 9: Potential Archaeological Sensitivity.

APPENDIX

Soil Boring Logs

Subsurface Exploration for

The Croton Water Treatment Plant

at Mosholu Golf Course, Van Cortlandt Park

Borough of the Bronx, City of New York

Appendices

City of New York
Department of Environmental Protection
Bureau of Environmental Engineering

November 2000

Metcalf & Eddy of New York, Inc. - HAZEN AND SAWYER, P.C.

A Joint Venture

Geotechnical Data Report2.doc

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APPENDIX A - Test Boring Logs

APPENDIX B - Air Track Boring Data

APPENDIX C -Test Pit Logs

Geotechnical Data Report2.doc

November 2000

APPENDIX A

TEST BORING LOGS

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEE! 1 4
LOCATION BRONX, OF NY
LOCATION MG-B1-99
HOLE NO N: 322, 939.04
UNE & SIA E: 524, 346.55

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| | | | FOIG. | | | | | | D SHW1 | | |
|---|-----------------------------------|------------------|-------------------------|--------------------|------------|--------------------------|---|------------|--------------------------------------|--------------------------|--|
| DEPIH DLPIH | | Fi | L H CASING OUT DATE. | DAIE: | | DAI | . Start: . Finish | | -16-99 -17-99 | [Gi | HOUND ELEVATION 188.36 HOUND WATER ELEVATION 179.05 |
| SAMPLE | 0.0 HW R 0.0 2" NO BIT SIZE | | _ t.D | WEIGH! INSIDE I | OF HAI | | _ | 0-14 24 | 0 | _ 185. IN. | HAMMER FALL CASING 24" SAMPLEP30" |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPTHS ELEN FEET | SAMPLE | 0-6 | BLOWS ON: SA 6 -12 | 000000000000000000000000000000000000000 | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFIL CHANG DEPTH | FIELD IDENTIFICATION |
| - 0 - | | 551 | 0'-2' | 16" | 1 | 1 | 1 | 1_ | | 0'- | BROWN SILT WITH |
| | | SS2 | 2' -4' | 14" | 2 | 4 | 12 | 12 | | 4' | SAND, ORGANIC MATTER IN TOP 2 FEET, VERY SOFT |
| A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | 4'-6' | 16" | | 24 | 35 | 28 | | | TO STIFF. (ML) |
| - 10 - | | 555 | 6'-8' 8'-10' | 15" | 31 | 19 38 | 24 41 | 28 43 | | 10' | RUSTY BROWN SILTY FINE SAND TRACE TO SOME GRAVEL, VERY |
| | | | 10'-10.7' | 4" | 43 | 100 | /2" | | | 13' | DENSE. (SM) (6-65) YELLOW BROWN SILTY |
| | - | | | | | | | | | | ROCK FRAGMENTS (GNEISS), COBBLES. |
| | | | | | | | | 1 1/2 m m | | | VERY DENSE. POSSIBLE SAPROLITI SOIL(DECOMPOSED |
| -20 - | | | | | | | | | | _ | ROCK). (SM AND 8M) (6-65/5-65) |
| | | R1 | 13'-23' | 94% | REC RQD | | | | | | GNEISS. MEDIUM GRAY, SLIGHTLY |
| | | | | - | 1. | | | | | | WEATHERED TO UNWEATHERED. SOME |
| | | | | | | | | | | | OXIDATION ON JOINTS TO 46'. FOLIATION AT 40 |
| - 30 - | | | | | | | | | 1 | | DEGREES TO SUB- VERTICAL QUARTZITI |
| | | R2 | 23'-33' | | REC ROD | | | | | | TO 79',92.5' TO 95'. |
| | | | | | | | | | | | FROM 13' TO 28', 40-DEGREE FOLIATIO JOINTS PREDOMINATE |
| -40 - | | | | | | | | | | | CLOSE TO MODERATEL CLOSE JOINT SPACING. |
| Soit | Engineer: _ | ,,, , | | | | Drl | ller: | GF | REG MAI | RNEY | |
| Drittin | g Inspector | : | | · | | Не | lper: | GF | REG WI | LLIA | 1 5 |

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEEL 2 OF 4
LOCATION BRONX, NY
HOLE NO MG-B1-99
LINE & STA N: 322, 939. 04
OFFSEL E: 624, 346. 55

L-9901B

FOR: METCALF&EDDY-HAZEN AND SAWYER

| CASING OD HW CAMPLER OD. 2" DIAMOND BIT SZE TO THE PER FOOT TO | SAMPLE SA | SAMPLE DEPTHS ELEV / FEET 33'-43' 43'-53' | Sample 1 Sam | RQD | BLOWS ON SA 0 12 | PER 6 | 0-14 24 | DENSITY OR CONSIST | PROFILE CHANGE DEPTH | ROCK IS GENERALLY GOOD. (1-65) FROM 28' TO 40', CLOSE JOINT SPACIS FROM 29.5' TO 31.5', SUBVERTICAL FOLIATION JOINT, SMOOTH, TIGHT, MICAL FROM 38.5' TO |
|--|--|---|--|--------------------------|------------------------|--|--|--------------------------|----------------------------|--|
| 50 -10 -70 | R3 | 33'-43' 43'-53' | 977 887 887 987 987 | REC ROD REC REC | ON SA | MPLER | 18 24 | OR CONSIST | CHANGE | ROCK IS GENERALLY GOOD. (1-65) FROM 28' TO 40', CLOSE JOINT SPACIS FROM 29.5' TO 31.5', SUBVERTICAL FOLIATION JOINT, SMOOTH, TIGHT, MICAL FROM 38.5' TO |
| 50 -10 -0 -70 | R4 | 43'-53' | 977 887 887 987 987 | REC ROD REC REC | | 12 - 18 | 18 24 | | | GOOD. (1-65) FROM 28' TO 40', CLOSE JOINT SPACIS FROM 29.5' TO 31.5', SUBVERTICAL FOLIATION JOINT, SMOOTH, TIGHT, MICAL FROM 38.5' TO |
| 60 -20 -70 | R4 | 43'-53' | 98% | ROD | | | | | | GOOD. (1-65) FROM 28' TO 40', CLOSE JOINT SPACIS FROM 29.5' TO 31.5', SUBVERTICAL FOLIATION JOINT, SMOOTH, TIGHT, MICAL FROM 38.5' TO |
| 50 -20 | R4 | 43'-53' | 98% | ROD | | | | | | FROM 28' TO 40', CLOSE JOINT SPACE FROM 29.5' TO 31.5', SUBVERTICA FOLIATION JOINT, SMOOTH, TIGHT, MICA FROM 38.5' TO |
| 50 20 70 | | | 98% | ROD | | | | | | CLOSE JOINT SPACI FROM 29.5' TO 31.5', SUBVERTICA FOLIATION JOINT, SMOOTH, TIGHT, MICA FROM 38.5' TO |
| 50 20 70 | | | 867 | RQD | | | | | | CLOSE JOINT SPACE FROM 29.5' TO 31.5', SUBVERTICA FOLIATION JOINT, SMOOTH, TIGHT, MICA FROM 38.5' TO |
| 50 20 | | | 867 | RQD | | | | | | FROM 29.5' TO 31.5', SUBVERTICA FOLIATION JOINT, SMOOTH, TIGHT, MICA FROM 38.5' TO |
| 50 20 70 | | | 867 | RQD | | | | | | FOLIATION JOINT, SMOOTH, TIGHT, MICA FROM 38.5' TO |
| 50 20 70 | | | 867 | RQD | | | | | | SMOOTH, TIGHT, MICA FROM 38.5' TO |
| 70 | | | 867 | RQD | | | | | | FROM 38.5' TO |
| 70 | | | 867 | RQD | | | | l | | DO OI A WA |
| 70 | | | 867 | RQD | | | | | 1 | 39.2', A 70-DEGRE |
| 70 | | | 867 | RQD | | | | | | JOINT WITH FOLIATION TREND, |
| 70 | R5 | 53'-55' | | | 0.00 | | | 1 | | OXIDIZED, ROUGH. |
| 70 | | | | 7. | REC | | |] | | AT 40.2' AND 42.3 |
| 70 | | | 100 | 7. | RQD | | | | | TWD 60-DEGREE |
| 70 | | | | | | | | 1 | 1 | JOINTS WITH |
| 70 | _ | | + | - | - | | | i | | FOLIATION TREND, |
| 70 | | | | <u> </u> | | | | 1 | ļ | OXIDIZED, CHLDRIT |
| | | | | | | | | | | (2-65) |
| | | | _ | | | | | | | 1 |
| | | | | | | | | | | FROM 40' TO 69', |
| | DC | 55'-65' | 100 | | | | | | | MODERATELY CLOSE |
| · · | | 197; <u>-63</u> , | 100 | RQD | REC | | | - | 1 | JOINT SPACING. AT |
| · · | | | 1 737 | INCOLU | | | | 1 | į. | 46.2', A 60-DEGRE JOINT WITH |
| · · | | | | | | | | 1 | | FOLIATION TREND, |
| -30 | | | | | | | | 1 | | CHLORITIC |
| | | | + | | | <u> </u> | | 4 | | ALTERATION, ROUGH |
| | | | | - | | | | 4 | 8 | AT 51', A 60-DEGR |
| | | | | | | | -2 | 1 | | JOINT WITH |
| | | | | | | | 1 | 1 | 1 | FOLIATION TREND, ALTERATION IN |
| | 87 | 65'-75' | 100 | 7. | REC | | 3,500 | 1 | 1 | EPIDOTE, ROUGH. |
| | | · | 747 | ROD | | | |] | | FROM 61.75' TO 62 |
| · | | | | - | | | | 4 | | A 70-DEGREE |
| 80 | | | | | | <u> </u> | - | -{ | 1 | FOLIATION JOINT, |
| 40 | | | | - | | | | - | 1 | SMOOTH, TALC. FRO |
| | es: | | | <u>+</u> | 1 | | ــــــــــــــــــــــــــــــــــــــ | 1 | | 1 40' ID 69', ROCK |
| Soil Engineer: | L | | | | Dri | Ber: | Gf | REG MA | RNEY | |
| Dritting Inspector: | | | | - | | | | REG WI | | |

LICH LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEE! | 3 4 |
|------------|----------------|
| LOCATION | BRONX, OF NY |
| HOLE NO _ | MG-81-99 |
| | N: 322, 939.04 |
| LINE & SIA | E:624,346.55 |
| OFFSET | |

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| DE PUI (NE PUI | | I | I H CASING OUI I ALL CASING OUI DAIR | DAIE. | | _ DAII | . SIARI: | | -16-99 -17-99 | GR GR | OUND ELEVATION 188.36 OUND WATER ELEVATION 179.06 |
|--------------------|--|--------------|---|--------------------|--------|------------------|----------|------------|--------------------------------------|--------------------------|--|
| SAMPL | G OD <u>HW</u> ER OD. <u>2"</u> XXO BII SIZE | | | WEIGHT INSIDE I | OF HAI | MMER _ OF SAM | | 0-14 24 | 10 | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLEP30" |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPTHS ELEV / FEET | SAMPLE | 0.6 | ON SA | PER 6" | | DENSITY OR CONSIST MOISTURE | PROFIL CHANG DEPTH | FIELD IDENTIFICATION |
| - o - BO | | | | | 0.0 | 0.12 | 12 - 18 | 18 - 24 | MOSIONE | | GENERALLY VERY GOOD. (1-65) |
| | | R8 | 75'-85' | | REC | | | | | | FROM 69' TO 82.5', ROCK IS CLOSELY JOINTED. FROM 69.5 TO 70.3', A SMOOTH |
| 90 -10 - | | | | | | - | | | | | FOLIATION JOINT AT 80 DEGREES. FROM 71' TO 82.7', VERY CLOSELY TO CLOSEL |
| | | R9 | 85' -95' | 100 | | REC | | | | 95' | FROM 76.5' TO |
| 100 -20 - | | | | | | | | | | | 77.5', AN 85-DEGRE FOLIATION JOINT, SMOOTH, SLIGHTLY ALTERED IN |
| | | | - | | | | | | | | CHLORITE, OPEN, WITH 30-DEGREE JOINTS WITH FOLIATION TREND, SOFT. FROM 79.2' 1 79.5', A 70-DEGREE SMOOTH FOLIATION |
| 11 -30 | | | | | | | | |] | | JOINT, EPIDOTE, MICA, OPEN. |
| | | | | | | | | | | | FROM 80' TO 82.5', TWO 80-DEGREE FOLIATION JOINTS, SMOOTH, SOFT, GPEN, CHLORITIC |
| 12 | | | | | | | | | | | ALTERATION, WITH FOUR 30-DEGREE JOINTS WITH FOLIATION TREND. (3-65) |
| Sol | Engineer. | - | | | | Or | iller: _ | Gi | REG MA | RNEY | |
| Ontil | ng Inspecto | <u> </u> | | | | не | alper: _ | G | REG WI | LLIA | MS |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| HEET | 4 0 | 4 - |
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| HOLE NO _ | MG-B1-99 | |
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| SAMPI | LER OD 2" OND BIT SIZE | NQ | _ 1D | | INSIDE | OF HAI | OF SAM | PLER _ | 24 | <u>.</u> | _ L8S. IN. | CASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE (| | SAMPLE | 0 0 | ON S | PER 6" | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGI DEPTH | FIELD IDENTIFICATION |
| - u - | | | | | | - | 0.12 | 12 - 16 | 16 - 24 | | | |
| | | | | | | | | | | | | BELOW 82.5', MODERATELY CLOSE 1 WIDE JOINT SPACING |
| | | | | | | | | | | | | FROM 85' TO 85.4', AN 80-DEGREE FOLIATION JOINT, SMOOTH, MICA, OPEN. |
| - 10 - | | | | | | | | | | i | | AT 92.5', A 60-DE- GREE FOLIATION JOINTS, SMOOTH, |
| | | | | | | | | | | | | END OF HOLE 95' |
| | | | | | | | | | | | | CAN DI PICE 30 |
| - 20 - | | | | | | | | | | | | |
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| | Engineer: | | | | | | D | iller: | GI | REG MA | RNEY | |
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MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEEL 1 4
LOCATION BRONX, OF NY
HOLE NO MG-82-99
LINE & SIA E: 624, 359.03

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| CASING | G OD HW | H | AL CASING OUI DAIE | | OF HAM | DAIE. | FIMISH- | 3 0-14 | | GR GR . LBS. | OUND ELEVATION 194.63 OUND WATER ELEVATION 186.35 HAMMER FALL CASING SAMPLEP 30" |
|--------|-----------------------------|-------------|------------------------------|-------------|------------|--------|-----------|-----------|--------------------------------------|--------------------------|---|
| DIAMC | OND BIT SIZE | NQ | | <u> </u> | | | | | | | |
| | CASING BLOWS PER FOCT | SAMPLE | SAMPLE DEPTHS ELEV ' FEET | SAMPLE | - | ON SAI | MPLER | 15 - 24 | DENSITY OR CONSIST MOISTURE | PROFIL CHANG DEPTH | FIELD IDENTIFICATION |
| | | SS1 | 0'-2' | 18" | 1 | 1 | 1 | 2 | | 0'- | BROWN SANDY SILT, |
| | | SS2 | 2'-4' | 15" | 3 | 5 | 4 | 5 | | 47 | ORGANIC MATTER, SOFT. RUST BROWN, SANDY SILT, STIFF, FROM 2' TO 4' |
| | | | | | | | | | | | (ML) (11-65) RUSTY BROWN SILTY SAND WITH SANDY |
| - 10 – | | S 63 | 8'-10' | 9" | 16 | 31 | 40 | 42 | | 11' | SILT INTERLAYERS, ROCK FRAGMENTS. (SM) (6-65) |
| | | R1 | 11'-15' | | REC RQD | | | | | | GNEISS. MEDIUM GRAY, PYRITIC THROUGHOUT, |
| | | | | <u> </u> | | | | | - | ľ | MODERATELY HARD TO HARD, SCHISTOSE TO 37.5', QUARTZITIC |
| - 20 - | | | | | | | | | | | BELOW 95'. WEATHE ED AND GXIDIZED T 36.5'. |
| | | R2 | 15'-24' | | REC ROD | | | | 1 | | FOLIATION VARIES FROM 40 TO BO DEGREES. CLOSE TO |
| | | | | - | | | | | - - - | | MODERATELY CLOSE SPACING. |
| - 30 | | | | | | | | | | | FRACTURED AND OXIDIZED FROM 17' 18', 23' TO 24'. |
| | | R3 | 241-341 | 100 | % RQD | REC | - | | 1 | | HARD FROM 32.7' 1 34.6' WITH SMOOTH FOLIATION JOINTS |
| | | | | | | | | | | | OXIDIZED, WEATHER ZONE. STRONGLY OXIDIZED ON SMOO |
| 40 | | <u> </u> | | | | | | | 1 | | FOLIATION JOINTS, SOFT. FRIABLE, FRO |
| Soil | Engineer: | | - | | | Di | riller: _ | G | REG MA | RNEY | , <u> </u> |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 2 OF 4

LOCATION BRONX, NY

HOLE NO MG-B2-99

LINE & STA

OFFSET E: 624, 359.03 OFFSET __

| РІН | | | H CASING OUT DATE | | | DATE | - Firmish | 3 | -4-99 -10-99 | GROU | IND ELETATION 194.63 IND WATER ELEVATION 186.35 3 24 99 |
|------------|-----------------------------|----------|------------------------------|--------------------|-------------------|----------------|-------------|------------|---------------------------|-------------------|---|
| MPLE | R U.D 2" NO BIT SIZE | | 1.0 | WEIGHT INSIDE E | of Han Engih (| AMER | 30 TER _ | 0-14 24 | | _ LBS. tN. C | HAMMER FALL SAMPLER30" |
| | CASING BLOWS PER FOCI | SAMPLE | SAMPLE DEPIHS ELEV / FEE! | SAMPLE | | BLOWS ON SA | | | DENSITY OR CONSIST. | PROFILE CHANGE | FIELD IDENTIFICATION OF SOIL |
| 0 - | rac roci | 6, Z | | s ñ | 0.6 | 6 ·12 | 12 - 18 | 18 · 24 | MOISTURE | D£#1H | 1 |
| 10 | | | | + | | | • | | | 1 | 35.5' TO 36.5'. |
| | | R4 | 34'-44' | 100 55% | % RQI | REC | | | | | FROM 40' TO 44', NINE 10 DEGREE- JOINTS ACROSS FOLIATION, ROUGH, |
| io | | | | | | | | | <u> </u> | | WITH TWO 50-DEGRE FOLIATION JOINTS. (2-65/3-65) ROCK |
| 10 - | | | | | | - | | | | | CLASS FROM 11' TO 24', 32.7' TO 54' (2-65) CLASS FROM |
| | | R5 | 44' -54' | | REC RQD | | | | | | 24' TO 32.7'. FRACTURED FROM 48 TO 49', 53' TO 54 |
| | | | | | | | | | | - | ROCK QUALITY IM- PROVES FROM 54' T 133' WITH MODERAT |
| 50 20 - | | | | | | | | | - | | LY CLOSE TO WIDE JOINT SPACING(1-6 |
| | | R6 | 54'-64' | 977 | REC | | | | 1 1 1 . | | FROM 90.45'TO 91. A SMOOTH 10-DEGRE |
| | | | | 97% | | | | | | | JOINT ACROSS FOLIATION. AT 133.25', A SMOOTH |
| 70 | | | | | | | | | | | 10-DEGREE JOINT ACROSS FOLIATION. FROM 135' TO 136. |
| -30 - | | | | | | | | | 1 | | A SUBVERTICAL FOLIATION JOINT, SMOOTH, OPEN, |
| | | .R7 | 64'-74' | | // | REC | | | | | ALTERATION IN CHLORITE, WITH FO |
| | | | | 100 | /a | RQI | | | 1 | | 10-DEGREE JOINTS ACROSS FOLIATION ROUGH, OPEN. |
| 80 -40 | | | | | | | | | - | | |
| | Enginaer: | 10000-0- | | 399-20 | | Dr | iller: | G | REG MA | RNEY | |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 3 4
LOCATION BRONX, OF NY
LOCATION MG-82-99
HOLE NO N: 323, 039.00
LINE & STA E: 524, 359.03

L.99018

COD. METCALF&EDDY-HAZEN AND SAWYER

| | | 2019 | F | OR: | IC I OHL | - F &C. | UN 1 - | ПНТЕ | 4 HIV | D SHW | i ican | |
|---------------|-------------------------------------|--|-----------|--------------------|---------------------|-----------------|----------------|----------------------|------------|---------------------------|-------------|--|
| 11944 1194 | | H | H CASI | ING OUI UI DAIE | DAIL | | DAIE | , START: , FONISH | - 75 | -4-99 -10-9 | G | ROUND ELEVATION 194.63 ROUND WATER ELEVATION 3124199 |
| AMPU | OD HW ER O.D. 2" IND BIT SIZE | | _ 1 D | | WEIGHT INSIDE LI | | | | 0-14 24 | 0 | LBS. IN. | HAMMER FALL CASING SAMPLER 30" |
| | CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE DE | o | SAMPLE | | BLOWS ON SA | | | DENSITY OR CONSIST. | | IGE FIELD IDENTIFICATION |
| | PER ICOI | Z | | | 67 22 | 0.0 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | DEPI | |
| во | | | | | | | · | | | | 1 | AT 142' AND 146.3' TWO 40-DEGREE |
| | | R8 | 741-841 | | 100 | <u>х</u> RQI | REC | | - | | | SMOOTH JOINTS ACROSS FOLIATION, ALTERATION IN |
| | | | | | | NUKL | | | | | | CHLORITE, EPIDOTE. |
| 90 | | | | | | | | | | | | FROM 146.8' TO 147.2', THREE 30~ |
| - 10 - | | | | | | | | | | 1 | | DEGREE JOINTS WITH FOLIATION TREND, |
| | | | | | | - | | | | 1 | | ROUGH, WITH A 10- |
| | | R9 | 84'-94' | | 100 | | REC | | | | | DEGREE JOINT ACROS |
| | | | | | 95% | RQI | | | | | | (2-65) CLASS FROM 133' TO 140'. |
| | | | | | | | | | | | | (1-65) CLASS BELD |
| 100 | | - | | | - | - | | | | 1 | 1 | |
| – 20 · | | | | | — | | - | | | 1 | | |
| | | - | | | 1 | | | - | | 1 . | | |
| | | KI | 0947-104 | <i>-</i> | 887 | RE(| | | | 1 | | |
| | | | | | | | 1. | | | _ | | |
| 11 | d | | | | | | | <u> </u> | ╂ | - | | |
| -30 | | R1 | 11047-11 | 07 | 100 | 7. | RE | d | | 1 | | |
| | | | | | | — | | - | | 4 | | |
| | 4 | | | | - | | | ! | | 4 | | * |
| | | - | | | # | <u> </u> | + | | | _ | | |
| | | | | | | | | <u> </u> | | _ | | |
| 12 | | RI | 2110'-12 | 201 | 98 | | | | | 1 | | |
| | Engineer, | | | | | _ | | hdita: | | REG M | IARNE | Y |
| 1 | ing Inspect | | | | | | | oriller: _ | Ó | REG W | IILLI | AMS |
| | - a wohacu | · · | | | | | t | letper: - | | | | |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK

Warren George Inc. WGI

SHEEF 4 OF 4
LOCATION BRONX, NY
HOLE NO. MG-B2-99
LINE & SIA N: 323, 039.00
OFFSEI E: 624, 359.00

| JNTRI | AUTE | IED-54 | 3 | | - 30 | IBSUR | FACE | RXFIX | OFTASK | ·N | OF | FSEI | E: 024, | 337.03 |
|----------------|--------------------------|------------|----------------|--------------|--------------------|-------------------|-------------------|--|--------------|--------------------------------------|----------------------------|--------------|---------------------------|--|
| | L.99 | 9018 | | FOR: | METCAL | F&EI | PYQ(| †AZEI | N ANI | D SAWY | ER | | | |
| | | | 11 CA | | | | | | - 3 | -4-99 -10-99 | _ GRO | UND ELEV | ation 194 Ir Elevation | .63 186.35 3124199 |
| MPLER (| OU. 2" Bil SIZE | 100 | .10 | 201510 | WEIGHT INSIDE L | of Haw Engih (| IMER _ DF SAMI | 30 NER _ | 0-14 24 | 0 | . 18S. UN (| CASING _ | HAMMER I | ALL |
| В | ASING ILOWS R FOOT | SAMPLE | SAMPLE ELEV | | SAMPLE | | | MPLER | | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPIH | | RELD IDENT | |
| v | | | | | CZ | 0.0 | 0 -12 | 12 - 18 | 18 - 24 | | - | | | |
| 20 | | | | | | | | | | 1 | | ļ . | | |
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| 3d_ 10 | | R13 | 120'-1 | 301 | 95% | REC | | | | 1 | [| | | |
| "T | | | | | | RQD | | - | <u> </u> | 1 | 1 | | | |
| <u> </u> | | | | | - | | | + | | 1 | | 1 | | |
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| F | | | | | | | | Ţ | ļ. — | 7 | | | | |
| 140 | | | | | | L | | | | - | Ì | 1 | | |
| 20 | | R14 | 130,-1 | 40' | 95° | | | - | 1 | | | - | | |
| t | | | | | 7,7,7 | 17(2) | | | | = | | | | |
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| 150 | | + 60 | 51401-1 | EO | | 4 BC | ╁─ | + | | 4 | 150 | , = | ND OF H | DLE 150' |
| -30 + | | L RI | 5140'-1 | 30, | | Z RE | | | | | 150 | 01 | RIENTED | CORE FR |
| - | | - | | | | | 1 | | - | 4 | | | 10' TO | 150'. LITY TES |
| t | | | | | | | | | 1 | _ | } | 11 | N SOIL. | WATER |
| ĺ | N-0-50 | _ | | | | 4 | | | + | 4 | 1 | | | TESTS I |
| | | | | | | | | | | | | 1 | 50'. TW | 10. |
| 160 | | | | | | | | | | | | I | | D AT 84' |
| -40 - | <u> </u> | | <u> </u> | | | | | | | | | 8 | ND 1497 | |
| Soll E | ngineer: | | | | | | ! | Drill er : | | GREG M | ARNEY | | | |
| | | | | | | | | | | GREG W | ILLIA | MS | | Marie Salaria (Marie Salaria Marie |
| Dumud | rispect | or: | | | | | | nerper: | | | | | | |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEE! 1 4
LOCATION BRONX, NY
HOLE NO MG-B3-99
LINE & STA E: 624, 368.95

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| | | | FOR: | | | | | | | | |
|------------------------|---------------------------------|------------------|----------------------------|--------------------|-------------------|------------------|-----------|-------------------|--------------------------|-------------------|--|
| Plii | | 11 | 11 CASING OUI | DAIE | | DATE | ŞIARI. | - 2 | -19-99 | | OUND ELEVATION 197.03 |
| H14 | | 11 | ALL CASING OUI DATE | | | DAIR | , FINISH: | | -24-99 | _ GRC | OUND WATER ELEVATION 184.40 2 26199 |
| asing Maple Lamo | ROD HW ROD 2" ND 811 SIZE | NQ | _1D | WEIGHI INSIDE L | of Han Engih (| MER _ DE SAMI | | 0-14 24 | | . LBS. IN. | HAMMER FALL CASING 24" SAMPLER30" |
| | CASING BLOWS | SAMPLE NUMBER | SAMPLE DEPTHS ELEV FEET | SAMPLE | | BLOWS ON SA | | | DENSITY OR CONSIST | PROFILE CHANGE | FIELD IDENTIFICATION |
| | PER FOOT | w z | | REC | 0-6 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | DEPIH | 3. 2. |
| | | SS 1 | 0'-2' | 18" | 1 | 1 | _1 | 2 | | 0'- | GRAY SILT WITH FI |
| | | SS2 | 2'-4' | 6" | 3 | 3 | 8 | 20 | | 3' | SAND, DRGANIC MATTER. SOFT. (ML) (11-65) |
| | | | 4'-6' | 14" | 22 | 27 | 31 | 38 | | | |
| | | | 6'-7.2' 8'-8.4' | 3" | 31 100 | 44 /5' | | /3" | | | YELLOW BROWN SILT FINE SAND, TRACE SOME GRAVEL, ROCK |
| 10 - | | | | | | | | | | 11, | FRAGMENTS, COBBLE |
| | | | | | | | | | | | GNEISS. MEDIUM GRAY. SLIGHTLY |
| 1 | | R1 | 117-157 | _ | REC | | | | - | | WEATHERED TO UN- WEATHERED. SCHISTOSE(BIOTITE |
| | | | | - | | | | | | | GNEISS) FROM 35.5 TO 40.5', 65'TO 6 105' TO 112.5', |
| - 20 - | | | | | | | | | 1 | | 143' TO 150'. AMPHIBOLITIC FROM |
| | | R2 | 15'-23' | 43 | REC | | - | | · · | | 112.5' TO 140'. FOLIATION AT 50 DEGREES TO SUB- |
| | | R3 | 23'-27.5' | | REC | | | | | | VERTICAL. FRACTUR TO 23', ALTERAT: IN EPIDOTE AND |
| - 30 - | | | | | ARGI | | | | 1 | | OXIDATION ON JOIN TO 16.5'. (4-65/ |
| | | R4 | 27.5'-33' | 97 | A REC | | +- | | | | FAIR, CLOSELY |
| | | | | | 2 RQI | | | | | | JOINTED ROCK FROM |
| | | + | | - | - | | | - | - | | SMOOTH JOINTS. T AND CARBONATE CD ING AT 23'. A 40 |
| 40 | | +_ | | | | | | 1 | 1 | | DEGREE JOINT ALO FOLIATION WHICH |
| Soil | Engineer: | <u> </u> | | | | c | killer: _ | G | REG MA | RNEY | |
| | | | | | | | | | REG WI | | |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc.

2 SHEET LOCATION BRONX, OF HOLE NO. MG-B3-99 N: 323, 138.09 N: 323, 138.09 E: 624, 368.95

SUBSURFACE EXPLORATION

L.99018 FOR: METCALF&EDDY-HAZEN AND SAWYER DATE, SIART 2-19-99
DATE, FINISH 2-24-99 GROUND ELEVATION 197.03 DEPER _____ H ___ H CASING OUT DATE ____ GROUND WATER ELEVATION 184.40 DEPTH _______ IT ALL CASING OUT DATE. _____ 2 26 99 HAMMER FALL WEIGHT OF HAMMER _____300-140 _ 185. CASING 24" SAMPLER30" INSIDE LENGTH OF SAMPLER _____24 _ iN. DIAMOND BIT SIZE NO SAMPLE CASING BLOWS PER 6" DENSITY PROFILE SAMPLE DEPTHS RELD IDENTIFICATION OR **BLOWS** ON SAMPLER CHANGE ELEV FEET CONSIST. OF SOIL PER FOOT DEPTH 6 -12 12 - 18 18 - 24 MOISTURE 0 - 6 . 0 -STEEPER (50 DEGREES 40 R5 33'~42.5' 100 7, REC FROM 32.5' TO 37.5 CLOSELY SPACED 75% RQC JOINTS, MAINLY R6_42.5'-45' 100 REC FOLIATION JOINTS, 100 % RQU ALTERATION IN CHLORITE, A FEW JOINTS WITH TALC. 50 (3-65). - 10 -FROM 37.5' TO 55' MODERATELY CLOSE T WIDE JOINT SPACING AT 42.5', A SMOOTH R7 45'-55' 98% REC 50-DEGREE JOINT. A 837 RQD 70-DEGREE FOLIATIO JOINT. FROM 51.7' TO 52.6' (1-65) 60 FROM 54.5'TO 58.5' - 20 ROCK IS CLOSELY JOINTED. FROM 58.5 TO 65', MODERATELY CLOSE JOINTED R8 55'-65' 99% REC SPACING. A 50-DE 78% RQD GREE JOINTS ACROSE FOLIATION, SMOOTH, OPEN, FROM 57' TOC 70 58'. (2-65) ~ 30 FROM 65' TO 76.7', ROCK IS CLOSELY TOOMS HTIW GETNIOL JOINTS. FROM 65' 1 R9 65'-75' 96% REC 66.3', THREE SMOOT FOLIATION JOINTS # 42% RQD 75'. FROM 66.5' T(67', A 60-DEGREE 80 FOLIATION JOINT. SMOOTH. MICA. . An GREG MARNEY Soil Engineer: _____ Oriller: GREG WILLIAMS Dritting Inspector: . Helper: -

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 3 4
LOCATION BRONX, ON NY
HOLE NO MG-83-99
UNE & SIA E: 624,368.95

L. 99018

FOR METCALF&EDDY~HAZEN AND SAWYER

| | L. 3 | 301B | | FOR: | IE I CAL | .F &E) | - אמנ | MAZE | N AN | D SAWY | ER | |
|--------|-----------------------------|--------|-----------------|----------|---------------------|------------|-------|----------------------|------------|-----------------------------|--------------------------|---|
| MPIH | | FI | FI CA | SING OUT | DAIE | | DAIE | . SIARI. . FINISH | | -19-99 -24-99 | G G | COUND BLEVATION 197.03 COUND WATER ELEVATION 184.40 |
| AMPU | FOD HW FROD 2" | | 1D | | WEIGHI INSIDE LE | | | | 0-14 24 | | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE E | | SAMPLE | | | MPLER | | DENSITY OR CONSIST MOISTURE | PROFII CHANG DEPTI | SE FIELD IDENTIFICATION |
| - 0 - | | | | | ~ | 0 0 | 8 -12 | 12 - 18 | 18 - 24 | - Colorest | | |
| 80 | | | | | | | | | | | ļ | FROM 71' TO 73', THREE SMOOTH 60-DE |
| | | RIC | 75' -85' | | | REC ROI | | | | | | GREE FOLIATION JOINTS, CHLORITE ALTERATION WITH |
| 90 | | | | | | | | - | | | | THREE 20 TO 40-DE- GREE JOINTS ACROSS FOLIATION. FROM |
| - 10 - | | | | | | | | | | | | 74.5' TO 75', A 75 DEGREE FOLIATION JOINT, SMOOTH, MICA |
| | | | | | | | | | | | | FROM 76' TO 76.7', |
| | <u> </u> | R11 | <u>85' -95'</u> | | | REC | | | | - | | COATING. (3-65) |
| 100 | | | | | | | | | | | | ROCK QUALITY IMPROVES AT 76.7' SUBHORIZONTAL |
| - 20 - | | | | | | | | | | | , | JOINTS PREDOMINAT |
| | | R1 | 2951~105 | 5, | 977 | REC | | | | | | FROM 83' TO 84', CURVED 75-DEGREE FOLIATION JOINT. |
| | | | | | 917 | RQ | | | | | | SMOOTH. FROM 97.2 TO 99.5', A SUB- |
| 11 | | | | | | | | | | | | VERTICAL FOLIATIO JOINTS, SMOOTH. FROM 140.7' TO |
| | | D1 | 3105'-1 | 121 | 98 | RE | - | | - | _ | | 141.2', A 50-DEGR FOLIATION JOINT, SMOOTH. AT 142.25 |
| | | | | | | RQ | | | | | | A 50-DEGREE FOLIATION JOINT, |
| | | | | | | - | | - | 1 | _ | | GOOD ROCK. (1-65) |
| 12 | 16.00 | | | | | | | | E | | | |
| Soil | Engineer: | | | | | P | (| oriller: | (| BREG M | ARNE | Υ |
| Drill | ling Inspect | tor: | | | | | 1 | lelper: | | GREG W | ILLI | AMS |
| | | | | | | | | | | | | |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 4 OF 4
LOCATION BRONX, NY
HOLE NO MG-83-99
LINE & STA
OFFSET E: 624, 368.95

| | L. 99 | 901,8 | | METCAL | _F&EI | DY- | HAZE | N AN | D SAWY | ER | | | | | |
|--------|--|----------------|-----------------|-------------|--------------------|--------------|----------------|-----------------|------------|---------------------------------------|---------------------|----------|----------------------------|----------------------|-------------------------|
| | | | FI CA | | | | | | | -19-99 -24 - 99 | | ROUNE | D ELEVATION D WATER ELE | VATION | 03 184.40 2[26]99 |
| AMPL(| ER OD <u>HW</u> ER OD <u>2"</u> IND BIT SIZE | | . ID | | WEIGHT INSIDE L | | | | 0-14 24 | | _ L85. IN. | CA | 14 SING | MMER FA | LL . |
| | Casing Blows Per foot | SAMPLE | SANIPLE ELEV | | SAMPLE | 0.8 | ON SA | PER 6" MPLER | 18 - 74 | DENSITY OR CONSIST. MOISTURE | PROF CHAN DEP | 4GE | FIEL | D IDENTIFI OF SOI | STAR R STARR |
| - ۵ - | | | | | - | | | 12 10 | 10 2- | | | \dashv | | | |
| 120 | | R14 | 1131-12 | 23' | | REC RQD | | | | | | | | | |
| | | | | | | | | | | 1 | | | | | |
| 130 | | | | • | | | | | | 1 | 1 | | | | a. s. |
| - 10 - | | | | | | | | | | - | | | | | |
| | | | | | | | | | | 1 | | | | | |
| | | R15 | 123'-1 | 33' | 100 | | RE | | - | - | | | | | |
| | | | | <u></u> | 100 | Z | RO | 1 | + | - | | | ļ | | |
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| 140 | d | | 1 | | | | <u> </u> | +- | 1 | 1 | ŀ | | 1 | | |
| -20 | | RI | E133'-1 | 40' | | REC | | | |] | | | | | |
| | — — | | - | | 93 | RQI |] | ┼─ | +- | | | | 1 | | |
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| 15 | | R1 | 7140'- | 150' | 98 | Z RE | d – | 1- | | _ | 1 | 50' | | | |
| Γ** | | | | | | % RQ | | Ι | | | 1- | 68 5.36 | END | OF HO | LE 150' |
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| Ì | | | | No No G G G | | | | | | | | | | | |
| 16 | 50 | | | | | | | | | 4 | | | | | |
| -40 | 0 -1 | <u> </u> | L | | | - | | | _1 | | | | | | |
| Soi | l Engineer: | | | | | | | Driller: | | GREG M | IARNI | EY_ | | | |
| Dri | iling Inspec | tor: | | | | | | Helper: | | GREG W | ILL. | IAM | 5 | | |

JOB FOCUTION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 1 OF 3
LOCATION BRONX, NY
HOLE NO. MG-B4-99
LINE & STA N: 323, 241.02
OFFSET E: 624, 352.78

| | L.99018 FOR: METCALF&EDDY-HAZEN AND SAWYER | | | | | | | | | | | |
|--------------------|--|--------|------------|--------|---------------------|-----|------|----------|---------|---------------------------------------|----------------------------|---|
| 114 JCI 144 JCI | | H | H. CASIN | I DAIL | DAIE | | DAIS | . SIARI. | _ | -25-99 -26-99 | | UND ELEVATION 198.82 UND WATER ELEVATION |
| SAMPL | ER OD 2" | | 10 | | WEIGHT INSIDE LE | | | | | | | HAMMER FALL CASING SAMPLER |
| - 0 - | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEF | | SAMPLE | 0 6 | | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | RELD IDENTIFICATION OF SOIL |
| U | | | | | | | - | | | | 0'- | ANGLED BOREHOLE DIRECTION: N 82 DEGREES E ANGLE: 60 DEGREES ROLLER BIT TO TOP OF ROCK |
| 10 | | | | | | | | | | | | NOTE: ALL DEPTHS SHOWN AS "DOWN-HOLE" OR NON-VERTICAL |
| | | | | | | | | | | | 15' | GNEISS. MEDIUM GRAY. MODERATELY WEATHERED TO UN- |
| -20 - | | | | | | | | | | | | WEATHERED, MODERATELY HARD. AMPHIBULITIC FROM 50' TO 56', 97.5' TO 100'; QUARTZITIC |
| | | R1 | 15'-25' | | | REC | | | | · | | FROM 64' TO 66'; 100' TO 104.5'; SCHISTOSE (MICA) FROM 33' TO 34',40 TD 50'; 66' TO 68' |
| -30 | | | | | | | | | | | | 78.5' TO 80'. FOLIATION VARIES FROM 20 TO 40 DE- GREES TO 48' AND FROM 50 TO 70 DE- |
| | | R2 | 25! –35' | | | REC | | | | | | GREES ON REST OF CORE. OXIDATION ON JOINT TO 28.5' AND FROM 66.1' TO 69' ON 60 DEGREE JOINTS |
| -40 Soil | Engineer: | | | | T | | D | riller: | G | REG MA | RNEY | ACROSS FOLIATION |
| Dimi | ng Inspecto | | | | | | | elper: . | | REG WI | LLIAM | S |

MUNICIPAL COLUMN

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET BRONX, NY
LOCATION MG-84-99
HOLE NO N: 323, 241.02
LINE & STA E: 624, 352.78

| UNIRACT HED-543 | | | | <u> </u> | BSUR | PACE | EXPL | RATE | N | | OF | E: 624, 352.78 | |
|-----------------|---------------------------|--------|-----------------|---------------|-----------------------|--------------|--|--------------|--------------|--------------------------|------|----------------|--|
| | L.99 | FOR: M | 1ETCAL | F&EI | DY- | HAZEI | N ANI | D SAW | YER | | | | |
| | | | H CA | | | | | | | -25-9 -26-9 | 9 | GROU GROU | IND ELEVATION 198.82 IND WATER ELEVATION |
| ASUN | oo HW | | I.D | | WEICHI | OF HAN | MER | 30 | 0 | | LBS | | HAMMER FALL |
| AMPL | ER O.D. 2" IND 81 SIZE | | _ I D | | and the second second | | | | | | IN | ٥ | CASING SAMPLER |
| | CASING 8LOWS | SAMPLE | SAMPLE (| | SAMPLE RECOVERY | | D. D | PER 6 | | DENSITY OR CONSIST | CHA | OFILE ANGE | FIELD IDENTIFICATION OF SOIL |
| 0 | PER FOCI | ₩ Z | | | R S | 0-0 | 6 -12 | 12 - 18 | 16 - 24 | MOISTUR | E DE | PīH | N 197905 |
| ю | | | | | +-+ | | | - | | | 1 | | CLOSE JOINT SPACING FROM 17.5' TO 22' |
| - 1 | | | | | | | | | | | | | 33.5' TO 50', |
| | | 83 | 35'-45' | | 96% | REC | | | | | | | MAINLY FOLIATION JOINTS, SMOOTH. |
| | | - 1,12 | | | | RDD | | <u> </u> | | | 1 | | FROM 21.5' TO 22' |
| | | | | | 1 | | | ļ | | ł | | * | VERTICAL JOINT, SILT COATING. |
| 5O | | | | - | | | | | | | 1 | | AT 38.5', A VERY |
| 10 - | | | | | + | | | | | 1 | | | SMOOTH JOINT, AL |
| | | | | | | | | | <u> </u> | | 1 | | CHLORITE AND |
| | | | | | 1 | | | - | | } | - | | EPIDOTE, POSSIBLE SHEAR. |
| | | R4 | 45' -55' | | 96% | REC | | 1 | <u> </u> | 1 | | | SUCHK. |
| | | ļ | | | 64% | RQD | | | | | | | FROM 47' TO 51.25 |
| | | | | | | | | <u> </u> | | 1 | | | SOFT, FRIABLE, CHLORITE AL- |
| 60 | | | <u> </u> | | + | - | | | | 1 | 1 | | TERATION, WITH FI |
| - 20 - | <u> </u> | | | | | | | | | - ' | | | FOLIATION JOINTS 70 DEGREES FROM |
| | | 4 | ļ | | | | | ļ | 1 | | 1 | | 48.5' TO 50'.(3-6 |
| | | + | | | | _ | | | 1— | _ | | | BELOW 51.25', CLC |
| | | R5 | 55' -65 | | | REC | | | | 1 | • | | JOINT SPACING. |
| | | | · | | 96% | RQI | }— | + | ļ | -{ | ŀ | | QUARTZITIC ZONE FROM 66' TO 68' |
| | | | Ţ | | | | | 1 | | | | | WITH THREE 60-DE- |
| 70 | | + | | | | | | - | - | -1 | | | GREE JOINTS, ROUG |
| - 30 | | | | | | 1 | | | | 1 | - | | SMOOTH 30-DEGREE |
| | | | | | | | 1 - | 1 | T |] | Į | | JOINTS AT 76.5', |
| | | | | | | | + | | + | - | | | 79.7' TO 80', |
| 1 | <u> </u> | R6 | 65' <u>-</u> 75 | , | | RE | | | | | 1 | | |
| | | | | | 817 | RQI | 7 | - | + - | - | | | |
| | | | | 200 | 1 | | | #_ | 1_ | | | | |
| 80 | | 1 | L | | | 1 | 1 | 1 | l l | 1 | - 1 | | 1 |

LIUB LOCADON.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 3 OF 3 LOCATION BRONX, NY HOLE NO MG-84-99 LINE & STA E: 624, 352.78

| | L. 99 | 1ETCAL | F&ED | DY-I | HAZEN | t ANI | D SAWY | ER | | | | | |
|--------------|---------------------------------------|--------|----------|----------------------|---------------------|------------|----------------|-----------------------|---------|---------------------------------------|-----------------------|-------|--|
| ичи нчж | | FI | FI CA | SING OUI OUI DAIE | DATE | | | , SIARI: , FINISH, | | -25-99 -26-99 | 1 | | ELEVATION 198.82 WATER ELEVATION |
| SAMPL | S OD HW EN O.D. 2" OND BIT SIZE | | _ (D | | WEIGHT ENSIDE LI | | | | _ | | | CASII | HAMMER FALL NG SAMPLER |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE (| | SAMPLE RECOVERY | | BLOWS ON SA | | 16 - 24 | DENSITY OR CONSIST. MOISTURE | PROFI CHAN DEPT | GE | FIELD IDENTIFICATION OF SOIL |
| 80 | | | | | | | | | | | | | AT 97.5', 98.5', FOLIATION JOINTS, |
| | | R7 | 75'-85' | | | REC RQD | | | | | | | SMOOTH, TIGHT, EPIDOTE, MICA. IRREGULAR, CURVED JOINT AT 100.25 |
| 90 - 10 - | | | | | | | | | | | | | TO 101.4' ALDNG A QUARTZITE BAND, SMOOTH, TIGHT, CHLORITE. (1-65) |
| | | RB | 85'-95' | - | | REC RQD | | | | - | | | |
| 100 | | | | | | | | | | | | | - |
| | | R9 | 95'-10 | <u>i'</u> | 100 | % RQD | REC | | - | - | 10 | 5, | |
| 1 1 -30 | | | | | | | | | | | | | END OF HOLE 105' |
| | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | |
| | Engineer: | | | | | | | onller: _ | G | REG MA | ARNE | Y | |
| Dail | ling Inspect | or: | | 3 100 to 10 | | | H | letper | Œ | REG W | (LL.I | AMS | |

DOD LOCK MACH

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURPACE EXPLORATION

SHEET BRONX, NY
LOCARCH MG-B5-99
HOLE NO N: 323, 338.35
LINE & SIA E: 624, 394.20

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| DEP H | | н | II CASING OUI | | DAIL | , SIARI , FINISH | 3 | -4-99 -B-99 | GR | COUND REVAIION 199.49 ROUND WATER ELEVATION 185.5E | I I | |
|---------------------------|-----------------|--|---------------------------|-------------|-------------------|---------------------|--------------|----------------|---------------------------|---|--|-----------|
| CASING SAMPLI DIAMO | R O.D Z" | NQ | 1D | WEIGHT | of Ham Engih o | MER _ F SAMI | PLER | 24 | 0 | LBS. IN. | HAMMER FALL CASING 24" SAMPLER 30" | _ |
| | CASING BLOWS | SAMPLE | SAMPLE DEPTHS ELEV : FEET | SAMPLE | | | PER 6" | | DENSITY OR CONSIST. | PROFIL | GE PELD IDENTIFICATION | |
| | PER FOCI | 5 | | PEC S | 0.3 | 6 12 | 12 - 18 | 18 - 24 | MOISTURE | DEPTI | H | |
| - 0 - | | | | 1 | | | | | | 0'- | OF THE PERSONNELS OF ME IN IT. THE PERSON | ₹₹ |
| | | SS1 | 0'-2' | 17" | 1 | 2 | 2 | 4 | · | 2' | BROWN SILTY FINE SAND, ORGANIC | |
| | | SS2 | 2'-4' | 14" | 3 | 2 | 3 | 5 | | | MATTER. LOOSE. (SM) (11-65) | |
| | | 553 | 41-61 | 11" | 4 | 5 | 7 | 9 | | | YELLOW BROWN SIL | ΓY |
| | | SS4 | 61-81 | 12" | 12 | 13 | 17 | 27 | 1 | | GRAVEL. LOOSE TO DENSE.(SM) (7-65 | |
| - 10 - | | <u>\$</u> 55 | 8'-10' | 10" | 11 | 15 | 18 | 29 | 1 | 11' | , | |
| | | | 10'-12' | 8" | 20 | 23 | 29 | 31 |] | | GRAY BROWN SILTY | |
| | | <u>987</u> | 12'-13' | 2" | 30 | 41 | 100 | /0' | 4 | 13' | MEDIUM SAND, MIC ROCK FRAGMENTS. VERY DENSE. | Α, |
| | | ļ | | | | | | | 1 | | POSSIBLE SAPROLI | |
| | | | | + :- | | | | | 4 | : | (6-65) | <u>,</u> |
| -20 | | | | | -, . | | | | 1 | | GNEISS. LIGHT TO MEDIUM GRAY, | l |
| 1 | | | | | | | | | | | AMPHIBULITIC BEL | |
| | | R1 | 13'-23' | | REC | | - | 1 | | | 35.5'. IN GENERA MODERATELY HARD | NO |
| | | | | - | | | | | 7 | | HARD WITH SOFT A | |
| | | | | | | | | - | 7 | | 15' TO 16.5', 19 | }' ' T |
| 1 | | ļ | | 1 | | | # | 1_ | 4 | | 26'. WEATHERED F | |
| -30 | 1 | | | | | | + | + | | | 13' TO 26'. FOLIATION AT 40 | |
| | | R2 | 23'-33' | | Z REC | | | 1 | | | DEGREES TO SUB- VERTICAL, MOSTL' | |
| 1 | | - | | 43 | X RQI | | | + | | | 60 TO 70 DEGRE | £S. |
| 1 | | | | 1 | | | 1 | - | 7 | | INDISTINCT FROM 13' TO 15', 51. | |
| | | 1 | | _ | | 1 | 1 | | 7 | | TO 62'. | _ |
| -40 | <u> </u> | | | 1 | | | | | | | | |
| Soli | Engineer: | . | | | | (| Oriller: | F | REYNOLI | OS BI | RIDGPAL | |
| Drill | ing Inspect | or: | | | | 1 | Helper: | | ALVRO 1 | LOND | ON | |

. . .

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc. SUBSURFACE EXPLORATION

SHEET ____

1.99018

| | | 2010 | | FOR: | IE I CHI | -r &EI | יייי אינוני | HAZE | N AN | D SAWY | EK | |
|----------------|--------------------------------------|--------------|--------------|-------------|--------------------|--|-------------------|--------------------|--|---------------------------|--------------------------|---|
| DEPIH DEPIH | | ! !! | HALL CASING | ISING OUI | DAIL | | DAIS | . SIARI. FINISH | 3 | -4-99 -8-99 | GR | OUND ELEVATION 199.49 OUND WATER ELEVATION 185.58 3124199 |
| SAMPL | G OD HW ER O.D 2" DNO BIT SIZE | | _ 10 | | WEIGHT INSIDE L | OF HAN ENGTH (| MMER _ OF SAMI | 30 Pler | 0-14 24 | | _ LBS IN. | HAMMER FALL |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE (| | SAMPLE | <u>-</u> T | BLOWS ON SA | MPLER | | DENSITY OR CONSIST. | PROFIL CHANG DEPTH | FIELD IDENTIFICATION |
| - 0 | | | | | ~ ~ | 0.6 | 9 -15 | 12 - 18 | 18 - 24 | MOISTURE | DEPT | |
| 40 | | | | | + | | | | | | | OXIDATION ON JOINT |
| | | R3 | 33'-43' | | 100 | Z RQD | REC | | | | 9 | 9 |
| | | | | | 02/ | 12/87 | | | | | | CLOSE JOINT SPACIN |
| | | | | | | | | | | | | 28.6', FROM 15' TO 16.5', A SUB- |
| 50 | | | | | | | | | | | | VERTICAL FOLIATION |
| - 10 - | | | | | | | | | | ł | | JOINT, STRONGLY WEATHERED, SOFT AN |
| | - | | | | | | | | | |] | FRIABLE, TIGHT. |
| | <u> </u> | R4 | 43! -53! | | 100 | , | REC | | | - | | FROM 19' TO 20.75' |
| | | | | | | RQD | _KÇ.L | | | 1 | | FRACTURED ZONE, SOFT AND FRIABLE. |
| | | | | | - | | | | |] | ļ | FROM 22.5' TO 26', |
| | | | | | + | | | - | - | 1 | | FRACTURED, OXIDIZED FROM 26' TO 28.6', |
| | | | | | | | | | | • | | FOLIATION JOINTS A |
| 60 | <u> </u> | | | · | ╁ | | | _ | |] | 1 | 60 TO 80 DEGREES, |
| - 20 - | | | | | | | | | - | 1 | | SMOOTH, OPEN. (3-65) CLASS FROM |
| | | | L | | | | | | |] | | 13' TO 28.6'. |
| | | 1 KS | 537-637 | | 100 | | REC | | | 4 . | | BOOK BUALTTY TH |
| | | R6 | 63'-65' | | 100 | | REC | | | 1 | | PROVES AT 28.6' |
| İ | | | | | 917 | ROD | | | |] | | CLOSELY JOINTED |
| ļ | | | | | - | | - 20 | | | - | | FROM 32.25' TO 35.5'. FROM 32.5'T |
| 70 | | | | | | | | | | 1 | | TD 34.3', SEVEN |
| - 30 | - | | | | + | | | | | - | | FOLIATION JOINTS A |
| | | | | | | | | + | | 1 | | 60 DEGREES, SMOOTH |
| × | - | | - | | | | | | Τ. |] | | FOLIATION JOINTS & |
| | - | דם ו | 65' -75' | | 100 | | | } | | 4 | | 60 DEGREES AT |
| | | - K/ | 20/3. | | 927 | ROD | REC | 1 | - | | 75 | ' 35.5',40.5', 50.3' TO 51', 51.75',53' |
| | | 1 | | | | | <u> </u> | | |] | | (2-65) CLASS FROM |
| 80 | | + | | | | - | | | . | 4 | | 28.6' TO 53'. |
| -40 | | | | | 上: | | | | | | | |
| Soil | Engineer: | | | | · | | D: | iller: _ | R | EYNOLD | S BR | IDGPAL |
| Dritta | ng inspecto | r: | | | - | | Не | elper: | A | LVRO L | ONDO | N |
| | | | | | | | | - | | | | |

JUB TOCATION:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEEL BRONX, ON NY
LOCATION MG-B5-99
LINE & STA N: 323, 338.35
OFFSE! E: 624, 394.20

| MODERATELY CLOSE TO WIDE JOINT SPACING BELOW 53'. AT 72.3', A 40-DEGREE JOINT WITH FOLIATION TREND, CARBONATE COATING, (1-65) END OF HOLE 75' ORIENTED CORE FROM 65' TO 75'. PERNEABILITY TESTS IN ROIL. WATER PRESSURE TESTS IN ROIL. WATER INSTALLED AT 74'. TO T | | L.9 | 9018 | | FOR: N | IETCA | LF&E | -צממ | HAZE | N AN | D SAWY | ER | |
|--|----------|-------------------|--------|-----------|----------------------|--------|------------------|------------------|------------------------|------------|---------------|--------|--|
| SOURCE OF STATE OF THE STATE OF | OF PIH | | | I H CA | SING OUI OUI DAIE | DAIE _ | | _ DAII | E, ŞIARI: E, FINISH | _3 | | GRC | UND WAITER FLEVATION 185.58 |
| MODERATELY CLOSE TH WIDE JOINT SPACING BELOW 53'. AT 72.3', A 40-DEGREE JOINT WITH FOLIATION TREND, CARBUNATE CUATING. (1-65) END OF HOLE 75' ORIENTED CORE FROM 65' TO 75'. PERMEABILITY TESTS IN ROIL. WATER PRESSURE TESTS IN ROCK FROM 15' TO 75'. PIEZUMETER INSTALLED AT 74'. | SAMPL | er od 2 <u>"</u> | | 1.0 | | WEIGHI | OF HAI LENGIH | MMER _ Of SAM | 30 Pler | 0-14 24 | 0 | _ IN | HAMMER FALL |
| BID JOINT SPACING BELOW 53'. AT 72.3', A 40-DEGREE JOINT WITH FOLIATION TREND, CARBONATE COATING. (1-65) END OF HOLE 75' ORIENTED CORE FROM 63' TO 75'. PERMEABILITY TESTS IN SOIL. WATER PRESSURE TESTS IN ROCK FROM 15' TO 75'. PIEZOMETER INSTALLED AT 74'. | - o - | BLOWS PER FOOI | SAMPLE | 2000 2000 | | SAMPLE | 0 · 0 | ON SA | MPLER | 18 - 24 | OR CONSIST | CHANGE | FIELD IDENTIFICATION |
| Soil Engineer: | 10 20 | | | | | | | | | | | | 72.3', A 40-DEGREE JOINT WITH FOLIATION TREND, CARBONATE COATING. (1-65) END OF HOLE 75' ORIENTED CORE FROM 65' TO 75'. PERMEABILITY TESTS IN SOIL. WATER PRESSURE TESTS IN ROCK FROM 15' TO 75'. PIEZOMETER |
| Driller: Ol L.C. L.C. L.C. L.C. L.C. L.C. L.C. L.C | | ngineer: | 1 | | | | I | 22.0 | <u> </u> | | VNDI DO | | |
| Hetper: HLVRO LUNDON | | | | | | | | _ | | | | | SCI PIL |

propriories

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

HOLE NO. N: 323, 437.24

OFFSEI E: 624, 405.81

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| DEPIH | | " | II CASING OUI DAIL | DAIE | • | DAIE | , SIARI: | | -19-99 -22-99 | | UND ELEVATION 195.84 HUND WATER ELEVATION 182.65 |
|---------------------------|---------------------------------------|--------|-------------------------|-------------|-------------------|--------------------|--------------|------------|--------------------------------------|----------------------------|--|
| CASING SAMPL DIAMIC | C O D HW ER O D 2" IND BII SIZE | NQ | 10 | WEICH! | OF HAN ENGIH (| anter _ Of Sami | 30 Pler _ | 0-14 24 | 0 | , LBS. IN. | HAMMER FALL CASING 24" SAMPLER ³⁰ " |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPTHS ELEV FEET | SAMPLE | 0.6 | BLOWS ON SA | | 18 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | REID IDENTIFICATION |
| - o - | | | 0'-2' | 16" | | 5 | 4 | 5 | | 0'- 2' | TOPSGIL(2"). DARK BROWN SILTY SAND, GRGANIC MATTER. LOOSE.(SM) (11-65) |
| | | | 4'-6' 6'-8' | 18" | | 7 | 11 | 20 | | 8, | ORANGE BROWN SILTY F-M SAND FROM 2' T 4', CDARSE SAND FROM 4' TO 6' WIT |
| — 10 - | | SSS | 8'-10' 10'-12' | 12" | 21 | 29 | 33 | 37 | | | TRACE TO LITTLE GRAVEL. SOME GRAVE BELOW 8'. MEDIUM DENSE TO DENSE. |
| | | | | 1 | 30 | | | | | 13' | (SM AND GM)(6-65) YELLOW BROWN SILTY F-M SAND, SOME GRAVEL, MICA, ROCK FRAGMENTS. |
| -20 · | | | | | | | | | | | VERY DENSE. POSSIBLE SAPROLITI SOIL (DECOMPOSED ROCK). (SM AND GM) (6-65/5-65) |
| | | R1 | 13'-23' | | REC | | | | | | GNEISS. LIGHT TO MEDIUM GREEN GRAY, AMPHIBOLITIC GNEISS, MODERATELY WEATHERED TO UN- WEATHERED, MEDIUM |
| - 30 | | R2 | 23'-33' | 94' | Z REC | | | | | | HARD TO HARD. QUARTZITIC BANDS FROM 68' TO 72' AN FROM 73.5' TO 77'. FOLIATION AT 60 DE |
| | | | | 81 | | | | | - | | GREES TO SUB- VERTICAL. OXIDATIC ON JOINTS TO 18'. |
| - 40 | | | | | | | | | | | FROM 13' TO 21', CLOSE TO MODERATEL JOINT SPACING. |
| | Engineer: | | | | | 1535 | rliler: _ | | EYNOLD | | |
| Drift | ing inspect | or: | | | | н | elper: - | A | LVRD L | יוטעאט. | <u> </u> |

Warren George Inc.

SUBSURPACE EXPLORATION

SHEET 2 OF 4
LOCATION BRONX, NY
HOLE NO MG-86-99
LINE & STA N: 323, 437.24
OFFSET E: 624, 405.81

1 99010

| - | | 3018 | FOR: | METCA | LF &(E.) | JDY- | HAZE | n an | ID SAWY | ER | |
|-------------------------|-----------------------------------|--------------|----------------------------|--------------------|-------------------|----------------|-----------------|------------|---------------------------|---------------------|---|
| DEPIH | · | t | H CASING OUI DAIL | · | | DAIE | SIARI FINISH | 2 | -19-99 -22-99 | _ GIOU | NO ELEVATION 195.84 NO WATER ELEVATION 182.65 |
| CASIN SAMPI DIAMO | GOD HW EROU 2" OND BIL SIZE | NQ | _ I.D | WEIGHT INSIDE (| of Han Engih (| | | 0-14 24 | | . LB\$. IN. C/ | HAMMER FALL ASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPTHS FLEV , FEET | SAMPLE | | BLOWS ON SA | 1-110 | | DENSITY OR CONSIST. | PROFILE CHANGE | FIELD IDENTIFICATION OF SOR |
| - o - | | 2 | | ~ # | 0 6 | 0 -12 | 15 18 | 18 - 24 | MOISTURE | DEPTH | OF SOIL |
| 40 | | | | + | | | | | | | FROM 17.25' TO 18' |
| | | R3 | 33'-43' | 77% | % RQD | REC | | | | | A 70-DEGREE FOLIATION JOINT, SMOOTH, OXIDIZED, |
| | | | | | | | | | | | SOFT, FIABLE, TALC COATING, OPEN, IN- TERSECTED AT 17.6 |
| 50 - 10 - | | | | | | | | | | | BY A 60-DEGREE JOINT ACROSS FOLIA- TION AND A 20-DE- |
| | | R4 | 43' -53' | 100 | 7/ | REC | | | | | GREE JOINT WITH FOLIATION TREND, SMOOTH, OPEN. |
| | | | | | RQI | | | | - | | FROM 19.25' TO |
| | | | | | | | | | | | 19.5', A 70-DEGREE FOLIATION JOINT, SMOOTH, TIGHT, AN |
| 60 -20 - | | | | | | | | | | | 80-DEGREE JOINT WITH FOLIATION |
| | | R5 | 53' -63' | 100 | | REC | | | | | TREND, SMOOTH, TIGHT; AND A 60-DE- GREE WITH FOLIATION |
| | | | | 997 | | RQD | | | 1 | | TREND, SMOOTH, OPEN. IN GENERAL, FAIR ROCK TO 21'. |
| 70 | | | <u> </u> | | | | | | _ | | (3-65/2-65) |
| -30 | | | | | | | | | 1 | | MODERATELY CLOSE TO JOINT SPACING FROM 21' TO 43'. |
| | | R6 | 63' -73' | | REC | | 100 | |] | | AT 25.87, A 70-DE- |
| | | | | 947 | ROD | | | | | | GREE FOLIATION JOINT, SMOOTH, |
| | | R7 | 73'-78' | 100 | 1 / | REC | | | - | 78, | TIGHT. AT 28.3', A 50-DE- GREE JOINT WITH |
| BO -40 | 5 | <u> </u> | <u> </u> | | 7 | RQI | | | } | | FOLIATION TREND, SMOOTH, OPEN. |
| Soil | Engineer: _ | N 8 N | | | | Dri | ller: _ | R | EYNOLD! | S BRID | GPAL |
| Drittin | ng Inspector | 7 <u></u> | | | | — Не | iper: _ | A | LVRD L | ONDON | |

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET BRONX, OF NY
LOCATION MG-B6-99
HOLE NO N: 323, 437.24
OFFSET E: 624, 405.81

| | 1 - 9 | 9018 | | | - | | DDV | | | D SAWY | | OFFSEI |
|-------------------------|-----------------------------------|--------|----------------|-----------|--------------------|--------|--------|-----------|------------|------------------------------|--------------------------|--|
| DEPIH DI PIH | | H | H C | ISING OUI | DAIE | | DATE | . SIARI: | 2 | -19-99 -22-99 | GR | OUND ELEVATION 195.84 OUND WATER ELEVATION 182.65 |
| CASIN SAMPI DIAMO | G OD HW ER OD 2" DND BI SZE | NQ | _ I.D _ I D | | WEIGHT INSIDE I | OF HAN | AMER _ | | 0-14 24 | | , <u>,,,</u> | HAMMER FALL CASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE ELEV | DEPTHS | SAMPLE | | ON 54 | | | DENSITY OR CONSIST. MOISTURE | PROFIL CHANG DEPTH | FIELD IDENTIFICATION |
| - J - | | | | | | 0.6 | 0-12 | 12 - 18 | 18 - 24 | NO STORE | | AT 28.1' TO 29.2', A SUBVERTICAL FOLIATION JOINT, IRREGULAR, SMOOTH, TIGHT, WITH A 25- |
| - 10 - | | | | | | | | | | | | DEGREE JOINT ACROS FOLIATION, ROUGH, TIGHT. FROM 29.8'TO 30.2' TWO 70-DEGREE FOLIATION JOINTS, SMOOTH, TIGHT, WIT A 10-DEGREE JOINT ACROSS FOLIATION, ROUGH, OPEN. |
| -20 | | | | | | | | | | | | FROM 33' TO 34.8', A 75 TO 80-DEGREE JOINTS ACROSS FOLIATION, CURVED, IRREGULAR, ROUGH, TIGHT, WITH TWO 20-DEGREE JOINTS ACROSS FOLIATION, |
| - 30 | | | | | | | | | | | | SMOOTH, TIGHT. FROM 36.8' TO 38', 70-DEGREE FOLIATIO JOINT, SMOOTH, SOFT OPEN WITH A 10-DE- GREE JOINT ACROSS FOLIATION, ROUGH, TIGHT. |
| | | | | | | | | | | | | FROM 40.7'TO 42.2' A 75-DEGREE FOLIA- TION JOINT, IRREGU- LAR, SMOOTH, TIGHT, WITH A 50-DEGREE JOINT ACROSS FOLIA TION, SMOOTH, TIGHT (2-65) |
| Soil | Engineer: | | | | | | 0 | riller: _ | L_R | EYNOLD | S BR | IDGPAL |
| Oriz | ing Inspecto | r: | | · | | | н | elper; | A | LVRO L | ממאם | N |

Warren George Inc. SUBSURFACE EXPLORATION

SHEEL TO OF 4
LOCATION BRONX, NY
HOLE NO. MG-B6-99
LINE & STA. N: 323, 437, 24
OFFSEL E: 624, 405, 81

| | L.9 | 9018 | | FOR: | TETCA | LF&E | DDY- | HAZE | N AN | — D SAWY | ER | |
|-------------------------|-------------------------------------|--------|----------|----------|--------|--------------------|------------------|--------------|------------|---------------------------------------|----------------------------|--|
| DIPII | · | | I FI C/ | OUI DAIE | | | . DAI | E. FINISH | 2 | -19-99 -22-99 | GROU | ND ELEVATION 195.84 ND WATER ELEVATION 182.65 2123199 |
| CASIN SAMPI DIAMO | GOD HW LER OD 2" OND BIT SIZE | NQ | 0,1 | | WEIGHI | of Han Length (| MMER _ OF SAM | 30 PLER _ | 0-14 24 | ο . | _ LBS IN. C | HAMMER FALL ASING 24" SAMPLER30" |
| | CASING BLOWS PER FQQI | SAMPLE | SAMPLE (| | SAMPLE | 0-6 | ON SA | PER 6" | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| - 10 - - 20 - | | | | | | | | | | | | ROCK QUALITY IM— PROVES BELOW 43', MODERATELY CLOSE T WIDE JOINT SPACING FROM 46.3'TO 46.8' A 70-DEGREE FOLIA- TION JOINT, SMOOTH TIGHT, WITH A 50- DEGREE JOINT ACROS FOLIATION, SMOOTH, TIGHT. AT 64.5'. A 60-DE- GREE JOINT ACROSS FOLIATION, ROUGH, TIGHT. FROM 71.3'TO 71.8' CLOSELY JOINTED WITH SUBHORIZONTAL JOINTS, ROUGH, DPEN. (1~65) END OF HOLE 78' |
| -40 | | | | | | | | | | | | |
| Soil | Engineer | | | | | | Dr | iller: | RI | EYNOLD | S BRID | GPAL |
| Oritis | ng Inspecto | r: | | | | | He | elner | Al | LVRO L | ONDON | 50 |

Helper: _

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WGI Warren George Inc.

| SHEET | |
|---------------------|----------------|
| LOCATION_ | BRONX, O'NY |
| HOLE NO _ | MG-B7-99 |
| LINE & STA | N: 322, 927.76 |
| 1000 (20) (20) (20) | E: 624, 444.51 |
| OFFSET | |

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| L.99018 FOR: | | | | METCA | LF&E | DDY- | HAZE | N AN | ER | | |
|---|-------------|-----------------------------|------------------------|--|-------------------------------------|----------------|---------------|---------|--------------------------------------|--------------------------|--|
| DEPTH | ' | I FI CA | ISING OUI OUI DAIE. | DAIE SIARI 2-16-99 DAIE FINISH 2-17-99 G | | | | | | 1 914 | OUND ELEVATION 193.46 OUND WAIER ELEVATION 186.06 |
| CASING O.D. HW ID | | | | WEIGHT OF HAMMER 300-140 INSIDE LENGTH OF SAMPLER 24 | | | | | | _ £85. fN. | HAMMER FALL CASING 24" SAMPLER30" |
| CASING BLOWS PER FOOT | SAMPLE | SAMPLE C | STAND AND AND AND | SAMPLE RECOVERY | 0 · 6 | BLOWS ON SA | 0.50000 0.500 | 18 · 24 | DENSITY OR CONSIST MOISTURE | PROFIL CHANG DEPTH | FELD IDENTIFICATION |
| | | 0'-2' | | 16" | 1 2 | 1 | 1 | 1 | | 0' ~ 2' | TOPSOIL(3"). DARK GRAY BROWN SANDY SILT, ORGANIC MATTER. VERY SOFT. |
| | SS4 | 4'-5' 6'-7.4' 8'-8.4' | | 8" 6" 4" | 2 <u>1</u> 2 9 100 | 100 47 | /6" 100 | | | 87 | (ML) (11-65) TAN BROWN SILTY FINE SAND, TRACE GRAVEL. MEDIUM DENSE TO VERY |
| - 10 | SSG | 10'-11' | | 4" | 66 | 100 | _/6" | | | 147 | DENSE. (SM) (7-65) YELLOW BROWN SILTY F-M SAND WITH MICA ROCK FRAGMENTS, BOULDERS. VERY DENSE POSSIBLE SAPROLITIC SOIL |
| -20 | | | | | | | | | | | (DECOMPOSED ROCK). (SM AND GM)(6-65/ 5-65). ROLLER BIT FROM 11' TO 15'. GNEISS.MEDIUM GRAY OXIDATION TO 20'. FOLIATION AT 60 |
| | R1 | 15' -25' | | 98% | REC | | | | | | DEGREES TO SUB- VERTICAL. FROM 15' TO 35' MODERATELY HARD, |
| -30 | | | | | | | | | | | SLIGHTLY WEATHERED FRACTURED FROM 15' TO 17'. AT 16.25', AN BO-DEGREE FOLIATION JOINT, |
| | R2 | 25'-35' | | | REC | | | | | | ROUGH, TIGHT, OXIDIZED, WITH THREE 10-DEGREE JOINTS ACROSS FOLIATION, OPEN, ROUGH. AT 19.7', |
| Soil Engineer: | | | | | | Ori | iler: | GF | REG MAI | RNEY | 20.6', 70-DEGREE |
| Drilling Inspector: Helper: GREG WILLIAMS | | | | | | | | | | | |

Warren George Inc. SUBSURFACE EXPLORATION

SHECT 2 OF 3

LOCATION BRONX, NY

HOLE NO MG-B7-99

LINE & STA N: 322, 927.76

CFSEL COFFSEL

| | L.9 | 9018 | | FOR: 1 | METCAL | _F&EI |)DY- | HAZEI | N AN | D SAWY | ER | |
|--|-----------------------------|--------|----------|--------|--------------------|----------|------------------|-------|---|---------------------------------------|--------------------------|---|
| DI PIH | | DAIL | | DAIE | | | -16-99 -17-99 | — I 🛰 | ROUND ELEVATION 193.46 ROUND WATER ELEVATION 186.06 2123193 | | | |
| CASING OD HW ID SALIPLER OD 2" ID DIAMOND 8IT 9ZE NQ | | | | | WEIGH INSIDE LI | | | | 0-14 24 | 0 | _ 18S IN | HAMMER FALL CASING 24" SAMPLER30" |
| ر د | CASING BLOWS PER FOOI | SAMPLE | SAMPLE C | | SAMPLE | 0 6 | BLOWS ON SA | MPLER | 15 24 | DENSITY OR CONSIST. MOISTURE | PROFIL CHANG DEPTH | FIELD IDENTIFICATION |
| 40 | | | - | | | | | | | | | FOLIATION JOINTS, SMOOTH, OXIDIZED, TIGHT. |
| | | R3 | 35'-45' | | 100 | | REC | | | | | AT 21.4', A 70-DE- GREE JOINT WITH FOLIATION TREND, ROUGH, TIGHT, |
| 50 10 - | | | | | | | | | | | | EPIDOTE. BELOW 22',5 TO 10- DEGREE JOINTS PREDOMINATE, ROUGH (2-65) |
| | | R4 | 45' -55' | | 100 | Z RQI | REC | | | | | VERY GOOD ROCK WIT: MODERATELY CLOSE JOINT SPACING BELOW 35'. |
| 60 -20 - | | | | | | | | | | | | FROM 55.3' TO 56', A SUBVERTICAL |
| | | RS | 55' -65' | | 100 | % RQD | REC | | | | | FOLIATION JOINT, ROUGH, TIGHT, WITH TWO 5 TO 10-DEGREE JOINTS ACROSS FOLIATION, OPEN, |
| 70 -30 | | | | | | | | | | | | ROUGH. AT 62.5', A 70- DEGREE FOLIATION JOINT, ROUGH, TIGHT. |
| | | R6 | 65' -75' | | 100 | % RQI | REC | | | | | FROM 63.2'TO 63.4' A SUBVERTICAL FOLIATION JOINT, SMOOTH, TIGHT, MICA, WITH A 60-DE |
| 80 -40 | | | | | | | | | | | | GREE JOINT WITH FOLIATION TREND AT 63.4', SMOOTH, |
| Soil | Engineer: | | | | | 7.8 | Dr | iter: | G | REG MA | RNEY | |
| Drilling Inspector: GREG WILLIAMS | | | | | | | | | | | | |

Warren George Inc.

SUBSURFACE EXPLORATION

SHEET LOCATION BRUNX, OF NY HOLE NO.__ HOLE NO. N: 322, 927.76
LINE & STA. E: 524, 444.51

| | | 9018 | FC | R: ME | TUAL | _F&E, | DDY- | HAZE | N AN | D SAWY | ER | |
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| 114 3G H144G | | ! | I II CASIN | G QUI DA | AIĘ _ | | DAIE | SIART FINISH | 2 | -16-99 -17-99 | IGROU | ND ELEVATION 193.46 ND WATER ELEVATION 186.05 |
| SAMPL | S OD HW ER O.D. 2" IND BIT SIZE | | _ 10 | | WEIGHI INSIDE (| of Han Engih (| MER _ OF SAMI | 30 Pler _ | 0-14 24 | 0 | _ LBS. IN. C | HAMMER FALL ASING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPI | 1+6 1 | SAMPLE | | ON SA | PER 6" | | DENSITY OR CONSIST | PROFILE CHANGE | FIELD IDENTIFICATION OF SOIL |
| - o - | | | | | w 25 | 0.6 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | DESIH | |
| 80 | | | | | | | | | | | - 93 | OPEN. QUARTZITIC BAND |
| | | | | | | | | | | | | FROM 82' TO 85'. |
| | | 97 | 75'-85' | | 100 | •, | DEC | | - | | à | FOLIATION AT 60 |
| | | | 7383. | | | RQD | REC | | | | 85' | DEGREES TO SUB- VERTICAL. (1-65) |
| | | | | | | | | | | | | 120,120,121 |
| 90 | | | | | | | | | - | | | END OF HOLE 85' |
| - 10 - | | | | | | | | | | | [| |
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| -40 | ! | | | | L | | | | | 1 | 1 | <u> </u> |
| Sol | Engineer: | | | | | | Di | nuer: _ | 6 | REG MA | RNEY | |
| Driffs | ng Inspecto | r: | <u> </u> | | | | Н | elper: _ | G | REG WI | LLIAM | 6 |

Warren George Inc.

SUBSURFACE EXPLORATION

LOCATION BRONX, NY
HOLE NO MG-88-99
LINE & STA E: 624, 463.08

| | L.9 | 9018 | FOR | ۲ | 1ETCAL | _F&EI | DDY-I | HAZE | N AN | D SAWY | ER | |
|----------------------------|---------------------------------|------------------|------------------------------|-----|--------------------|-------------------|-----------------|----------------------|------------|---------------------------------------|--|---|
| мен | | FI | H CASING OUI D | AÆ. | DAIE: | | DAIE. | . SIARI: . FINISH | | -17-99 -1 9 -99 | GROU | ND ELEVATION 195.42 ND WATER ELEVATION 186.80 2123199 |
| C ASIN(SAMPLI DIAMO | OD HW R OD 2" NO BII SIZE | NΩ | _10 | | WEIGHT INSIDE U | of Han Ength (| AMER OF SAME | 30 Ker _ | 0-14 24 | o | _ LBS. IN. C. | HAMMER FALL ASING 24" SAMPLER30" |
| - o - | CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE DEPTHS ELEV / FEET | • | SAMPLE | 0.6 | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| | | 551 | 0'-2' | | 14" | 9 | 11 | 15 | 11 | | 0'- 2' | TOPSOIL (4"). DARK BROWN SILTY FINE SAND, ORGANIC |
| | | | 2' -4' 4' -4,3' | | 13" 4" | 17 100 | 20 /4" | 20 | 24 | | | MATTER. MEDIUM DENSE. (SM)(11-65) |
| | | | | | | | | | | | 6' | YELLOW BROWN SILTY F-M SAND, TRACE GRAVEL, COBBLES. |
| - 10 ~ | | | | | | | | | | | | DENSE.(SM) (7-65) GNEISS. LIGHT TO |
| | | R1 | 5'-14' | | 91% | REC | | | | | | MEDIUM GRAY, SLIGHTLY SCHISTOSE FROM 6' TO 15'. |
| 3 | | | | | | ROD | D D D O | | | | | FOLIATION AT 50 DE GREES TO SUBVERTI- CAL. OXIDATION ON |
| 20 - | | | | | | | | | | - - - | | JOINTS TO 26.5'. FROM 8.5' TO 15', FRACTURED ZONE. |
| | | R2 | 14'-24' | | 967 | REC | | | | - - | | STRONGLY OXIDIZED AND WEATHERED, WIT |
| | | | | | | RQI | | | | 1 | | FOLIATION JOINT FROM 12' TO 14', OPEN, INTERSECTED |
| -30 | | | | | | | | | | | | BY SIX SUBHORIZONT AL JOINTS ACROSS FOLIATION. A 60-DE |
| | | | | | | | | | | - | | GREE JOINT ACROSS FOLIATION AT 15', OXIDIZED, SMOOTH, |
| | | R3 | 24'-34' | | | 7. | REC | | | | | TIGHT. (3-65/4-65) |
| | | | | | | | | | | - | | |
| 40 Soil | Engineer: | <u> </u> | | | <u> </u> | L _ | r. | iller: | i G | ius sur | - | <u> </u> |
| | ng Inspecto | | | | | | U | _ | S | TEVEN | LUEDD | EKE |

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SIEEE 2 OF 3
LOCATION BRONX, NY
HOLE NO MG-88-99
LINE & SIA N: 323,075.62
OFFSEI E: 624,463.08

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| DI PIN DI PIN | | I | I II CASING OUI I ALL CASING OUI DAIE | DAIE | | DAI | E. START E. FINISH | | -17-99 -19-99 | GARC | DUND ELEVATION 195.42 DUND WATER ELEVATION 186.80 2123133 |
|------------------|--------------------------------------|--------------|--|--|--|------------------|-----------------------|--|--------------------------|-------------------|---|
| SAMPL | G OD HW ER O.D 2" DNO BIT SIZE | | | WEIGHT INSIDE I | of Han Engih (| AMER _ OF SAM | 30 | 0-14 24 | 0 | _ t85 fN. | HAMMER FALL CASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOL | SAMPLE | SAMPLE DEPTHS ELEV / FEET | SAMPLE | | | PER 6 | | DENSITY OR CONSIST | PROFILE CHANGE | FIELD IDENTIFICATION |
| - 0 - | | 01 Z | | Z S | 0.6 | o ·12 | 12 - 18 | 18 - 24 | | DEbih | OF SOIL |
| 40 | | | | - | - | | - | | | | BELOW 15', |
| | | | | | | - | | | 1 | i | MODERATELY CLOSE JOINT SPACING TO |
| | | R4 | 34'-44' | | REC | | | | 1 | | 24'. MODERATELY |
| | | | - | 95% | RQI | | | |] | ŀ | CLOSE TO WIDE |
| 1 | | | | | | | | | 1 | | SPACING BELOW 24'. |
| | | | | | | | | | | 1 | AT 19', A 60-DE- |
| 50 | | | | | | | | |] | | GREE JOINT ACROSS |
| - 10 - | | | | + | | | | | - | | FOLIATION, ROUGH, |
| ĺ | | | | | | | | | 1 | ļ | TIGHT. AT 25', 26.5' AND |
| ł | | | 444 | | | | | | 1 | | 27.25', THREE 70- |
| | - | . Ko | 44'-54' | | REC | | | | 4 | | DEGREE JOINTS |
| 1 | | | | 3/4 | KUL | | | _ | 1 | 1 | ACROSS FOLIATION, TIGHT, SMOOTH, |
| 1 | | | | | | | | |] | | OXIDIZED TO 26.5'. |
| 60 | | | | + | | | | | |] | AT 59', A 60-DEGREI |
| -20 - | | | | | | | | | ┨ | l | FOLIATION JOINT, |
| | | | | | | | | | 1 | | SMOOTH, TIGHT. IN GENERAL, VERY |
| 1 | | | | | | | | | | | GOOD ROCK BELOW |
| | | R6 | 54'-64' | 987 | REC | | | | 1 . | 1 | 24'. (1-65) |
| | | | | | ROD | | | - | 1 | | |
| | | | | _ | : | | | | 1 | Į | Į. |
| 1 | | | | | \vdash | | ├ | - | 4 | | |
| 70 | | | | | | | | <u> </u> | 1 | | |
| -30 - | | | | - | | | | | 1 | | |
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| | | RZ. | 64'-74' | 297 | REC | | | | j | | 1 |
| ł | | | | 987 | RQD | | | | | ŀ | |
| Ì | | | | | | | - | | - | | |
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| 80 | - | | | | _ | | | |] | | k |
| -40 - | | <u> </u> | | <u> </u> | <u>. </u> | | 1 | | <u> </u> | | 1 |
| Soil (| ngineer: _ | | | | | Or | iller: | GI | US SUR | I | · |
| Drillin | g Inspector | | | | | He | iper: _ | S | TEVEN | LUEDD | EKE |

WGI George Inc.

OFFSEI BRONX, OF NY
HOLE NO MG-88-99
INLE & SIA NI 323, 075.62
E: 624, 463.08

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| CASING SAMPL | S OD HW | | III CASING OUI DAIE I LD I D | WEIGHT | OF HAI | DAI | 30 | 0-14 | | GRC | DUND ELEVARON 195.42 DUND WATER ELEVATION 2123193 HAMMER FALL CASING 24" SAMPLER 30" |
|------------------------|-----------------------------|--|--------------------------------|----------------|-----------|-------|----------|---------|-----------------------------|----------------------------|---|
| | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE DEPIHS ELEV - FEE! | SAMPLE | | ON SA | PER 6" | | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION |
| . ₀ - 80 | | | | - ~ | Ū·ò | 0 -12 | 12 18 | 18 - 24 | MOISIONE | 1 | |
| | | RB | 74'-84' | 100 | % RQD | REC | | | | 847 | |
| | | | | | | | | | | | END OF HOLE 84' |
| 90 - 10 - | | | | | | | | | | | |
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| 12 | | | | | | | | | 1 | | |
| -40 Soil | Engineer: | - | <u></u> | | <u> F</u> | L., | 1 | | us sur | <u></u> | <u> </u> |
| | ng Inspecto | | | • | | | iller: _ | | TEVEN | | DEKĘ |

Warren George Inc. SUBSURFACE EXPLORATION

SHEET ____

LOCATION BRONX, NY NY HOLE NO N: 323, 275.41 E: 624, 486.52

L.99018 FOR: METCALF&EDDY-HAZEN AND SAWYER _____ II ____ H CASING OUI DAIR _____ DAIE. STARE 2-15-99 GROUND ELEVATION 198.13 H ALL CASING OUT DATE _ DATE FINISH __ 2-16-99 GROUND WATER ELEVATION 190.87 CASING OD HW 10 WEIGHT OF HAMMER 300-140 LBS. HAIMMER FALL SAMPLER O.D 2"______ ID _____ INSIDE LENGTH OF SAMPLER 24 IN CASING 24 SAMPLER 30 DIAMOND BIT SIZE __ SAMPLE CASING SAMPLE BLOWS PER 6 DENSITY PROFILE SAMPLE DEPTHS BLOWS FIELD IDENTIFICATION OR ON SAMPLER CHANGE ELEV - FEET CONSIST PER FOOT OF SOIL DEPIH MOISTURE 6 12 12 18 18 - 24 - 0 -07-TOPSOIL (6") DARK SS10'-2' 12" 5 4 4 BROWN SILTY SAND. 3 2' DRGANIC MATTER. SS22'-4' 14" 4 5 4 3 LOOSE. (SM) (11-65) 5" BROWN SILTY FINE SS34'-6' 14" 27 35 43 100 /4" SAND, TRACE FINE T MEDIUM GRAVEL. SS46'-8' 10 10 17 24 37 LOOSE TO VERY DENSE.(SM) (7-65) SS58'-10' 12" 14 24 30 31 - 10 TAN BROWN SILTY SS612!-12!1" 1" 10d /2" F-M SAND WITH MICA 13' ROCK FRAGMENTS (GNEISS). VERY DENSE. POSSIBLE SAPROLITIC SOIL R1 13'-18' 100 % REC (DECOMPOSED ROCK). 887 ROD (SM AND GM) (6-65) GNEISS. MEDIUM -20 GRAY, HARD, SLIGHTLY WEATHERED TO UNWEATHERED, DXIDATION ON JOINT TD 25', AT 41', 61.5', AND 85.5'. FOLIATION AT 60 DE GREES TO SUB-R2 18'~28' 10d % REC VERTICAL FROM 13' 88% RQD TO 30' AND BELOW -30 45'; AT 50 DEGREES FROM 30' TO 45'. MODERATELY CLOSE JOINT SPACING FROM 13' TO 30' WITH SOME FOLIATION JOINTS AND SUB-R3 28'-38' 10d z REC HORIZONTAL TO 60-95% RQD DEGREE JOINTS -40 ACROSS FOLIATION. Soil Engineer: REYNOLDS BRIDGPAL Driller: Drilling Inspector: __ ALVRO LONDON Helper:

Warren George Inc. SUBSURFACE EXPLORATION

SHEE! _

LOCATION BRONX, OF NY

HOLE NO _ N: 323, 275.41 UNE & SIA E: 624, 486.52

| DI PILI | - - | | FC II CASING OU | G OUL DAI | | | DAI | E. SIARI | | ID SAWY | GF | HOUND ELEVATION 198.13 HOURD WATER ELEVATION 190.87 |
|-------------------------|-------------------------------------|--------|----------------------------|-----------|----------------|-----------------|-------------------|----------------------------|------------|---------------------------------------|--------------------------|--|
| CASIN SAMPI DIAMO | G OD HW ER OD 2" DND BII SIZE | | ID | WI | EIGHI BOE (| OF HAI ENGIH | WIMER _ OF SAM | 30 IPLER _ | 0-14 24 | | _ LBS. IN. | HAMMER FALL |
| - o - | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPT ELEV - FEE! | SAMPLE SH | RECOVERY | 0.6 | ON SA | PER 6- MPLER 12 - 18 | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFIL CHANG DEPTI | SE FELD IDENTIFICATION |
| 40 | | R4 | 387-487 | | 100 | 7. | REC | | | | | FROM 13' TO 13.6', A SUBVERTICAL FOLIATION JOINT, OXIDIZED, ROUGH, TIGHT. |
| 50 -10 - | | | | | 95% | | | | | | | AT 19.8', A 60~DE- GREE FOLIATION JOINT, OXIDIZED, SMOOTH, TIGHT WITH A 50-DEGREE JOINT ACROSS FOLIATION, ROUGH, OPEN. AT 21.8', A 70-DE- GREE FOLIATION |
| 60 20 | | RS | 48' -58' | | 987 | % RQD | REC | | | | | JOINT, SMOOTH, TIGHT, EPIDOTE, MICA WITH A 50-DE- GREE JOINT WITH FOLIATION TREND, ROUGH, TIGHT, EPIDOTE. AT 24.4', A 60-DE- GREE JOINT ACROSS |
| 70 -30 - | | _R6 | 58'-68' | | 100 | % RQD | REC | | | | | FOLIATION, OXIDIZED, SMOOTH, TIGHT. (2-65) MODERATELY CLOSE T WIDE JOINT SPACING FROM 30' TO 76'. |
| 80 | | R7 | 68' -78' | | 100 | % RQD | REC | | | | | BELOW 38', 10-DE- GREE JOINTS PRE- DOMINATE. AT 34.5', A 60-DE- GREE JOINT WITH FOLIATION TREND, |
| - 40 - Soil (| ngineer | | | | | 1/81 | | lier: | RE | YNOLDS | BRI | SMOOTH, TIGHT. |
| Drillin | g Inspector | | | | | | He | lper: | AL | VRO LO | <u>וסמאכ</u> | <u> </u> |

WGI Warren George Inc.

SHEET S OF 4

LOCATION BRONX, NY

HOLE NO MG-B9-99

LINE & SIA N: 323, 275, 41

OFFSEI E: 624, 486, 52

| | L.9 | 9018 | | FOR: | METCA | LF&E | DDY- | -HAZE | N AN | — ID SAWY | | 7.55.02 |
|------------------------|--------------------------------------|--------|---------------|----------|------------------|-----------------|------------------|--------------------------|------------|--------------------------------------|----------------------------|--|
| | · | | FI ALL CASING | OUI DAIE | DAIE | | _ DAI | ie. Start ie, findsi- | | 2-15-99 2-16-99 | _ 0m | DUND ELEVATION 198.13 DUND WATER ELEVATION 190.87 |
| CASIN SAMP DIANK | IGOD HIM LER OD 2" DNO BII SZE | | 1D | | WEIGH! INSIDE | OF HA LENGIH | MMER . Of SAM | 30 PLER | 0-14 24 | 10 | _ 18S. IN. | HAMMER FALL CASING 24 SAMPLER 30 |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE D | | SAMPLE | 0.0 | ON S | PER 6" AMPLER | | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIFT C |
| 8 0 | | | | | | | 0.12 | 12 · 18 | 18 24 | 100000 | | AT 36.3', A 50-DE- GREE FOLIATION JOINT, SMOOTH, TIGHT, MICA. AT 59.2', A 60-DE- |
| 90 10 - | | RB | 78'-88' | | | REC | | | | | 887 | GREE FOLIATION JOINT, IRREGULAR, ROUGH, TIGHT. FROM 73.5'TO 74.8' A SUBVERTICAL FOLIATION JOINT. |
| | | | | | | | | | | | | ROUGH, OPEN WITH TWO 70-DEGREE JOINTS ACROSS FOLIATION, ROUGH, TIGHT. (1-65) |
| 100 -20 - | | | | | | | | | | | | CLOSE TO MODERATEL' CLOSE JOINT SPACING BELOW 76'. CLOSELY JOINTED FROM 76.3' TO 78' WITH 5 TO 10-DEGREE JOINTS PREDOMINANT. FROM 81.5' TO 83', |
| 110 30 - | | | | | | | | | | | | A SUBVERTICAL FOLIATION JOINT, SMOOTH, CURVED, TIGHT WITH TWO 10-DEGREE JOINTS ACROSS FOLIATION, TIGHT, ROUGH. |
| 120 | | | | | | | | | | | × | FROM 85' TO 86.2', FROM 85' TO 86', FROM 85' TO 86', FROM 85' TO 86', FROM 85', FROM |
| Soft E | ngineer: | | | | | | | | | YNOLDS VRO LO | | I FOLIATION, ROUGH, |

WGI Warren George Inc.

| SHEET | OF " |
|-------------|----------------|
| LCCARON_ | BRONX, O'NY |
| HOLE NO _ | MG-89-99 |
| LINE & STA. | N: 323, 275.41 |
| OFFSET | E: 624, 486.52 |

| | L.9 | 9018 | | FOR: 1 | 1ETCA | LF&E | -צממ | HAZE | N AN | D SAWY | ER | |
|------------------------|--------------------------------------|--------|---------------------|----------|--------|------------------|-------------------|--------------|------------|--------------------------------------|--------------------------|--|
| ULFIF | · | F | I FI CA | OUI DAIL | | | _ DAI | E. FONISH | 2 | -15-99 -16-99 | | OUND ELEVATION 198.13 OUND WATER ELEVATION 217/39 |
| CASIN SAMPI DIAM | G OD HW LER OD 2" DND BII SIZE | | _10 | | WEIGHT | OF HAI LENGTH | MIMER _ OF SAN | 30 PLER _ | 0-14 24 | 0 | _ LBS. IN. | HAMMER FALL |
| - 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE D ELEV 11 | | SAMPLE | D·6 | ON S | PER 6' | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFIL CHANG DEPIH | FIELD IDENTIFICATION |
| | | | | | | | | | | | | TIGHY AND A VERTICAL FOLIATION JOINT, SMOOTH, TIGHT. |
| | | | | | | | | | | | | FAIR TO GOOD ROCK. (3-65/2-65) |
| - 10 - | | | | | | | | | | i i | | END OF HOLE 88' |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| - 20 - | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| -30 - | | | | | | | | | | | <u> </u> | |
| | | | | | | | | | | | | |
| | · | | | | | | | | | | | |
| -40 - | <u> </u> | | | | | | | | | | | |
| Sol E | ingineer: _ | | | | | | Dri | ler: | RE | YNOLDS | BRI | DGPAL |
| Dritting | Inspector. | | | | | | Не | per: | AL | VRO LO | NDON | |

Warren George Inc.

SHEET 1 OF 3 LOCATION BRONX, NY HOLE NO. MG-B10-99 LINE & STA N: 323, 422.92 OFFSET E: 624, 505.15 OFFSET __

SUBSURFACE EXPLORATION

| | L.9 | 9018 | FOR: 1 | METCAL | .F&EI | -ץמכ | HAZE | N AN | D SAWY | ER | |
|---------------|---------------------------------------|---------------------------------------|----------------------------|-----------------------|------------|----------------|-----------------|------------|--------------------------------------|----------------------------|---|
| OF PIE | | FI | H CASING OUI DAIL | DAIL | | DAIE | ŞIARI FINISH | | -18-99 -19-99 | GROUI | ND ELEVATION 193.13 ND WATER ELEVATION 186.22 2122159 |
| SAMIPL | S OD HW ER O.D. Z" IND BII SIZE | · · · · · · · · · · · · · · · · · · · | . I.D | WEIGHT INSIDE L | OF HAIV | MER _ | 30 PLER | 0-14 24 | 0 | LBS. _ IN C | HAMMER FALL ASING 24" SAMPLER 30" |
| - a - | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPTHS ELEV FEET | SAMPLE | | BLOWS ON SA | | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| | | | 0'-2' 2'-4' | 9" | 3 | 5 | 5 | 7 | | 0'- 2' | TOPOSIL (3"). DARK GRAY BROWN SANDY SILT, ORGANIC MATTER. STIFF. (ML) (11-65) |
| — 10 - | | | 4'-5' 6'-7.5' | 14" | 11 15 | 15 27 | 17 100 | 30 /6" | | 8' | RUSTY BROWN SILTY SAND, TRACE TO SOM GRAVEL, SOME ROCK FRAGMENTS BELOW 6' DENSE.(SM AND GM) (6-65) |
| | | RI | 8'-18' | and the second second | REC RQD | | | | | | GNEISS. LIGHT GRAY TO MEDIUM GRAY, SLIGHTLY WEATHERED ON UPPER 6 FEET; SLIGHTLY WEATHERED TO UNWEATHERED THE REST. SOME |
| -20 | | | | | | | | | | | OXIDATION ON JOINT TO 54.2'. MODERATELY HARD TO HARD. QUARTZITIC FROM 14' TO 30.5', 36' TO 40.5'. |
| - 30 | | R2 | 187-287 | 100 | Z RQD | REC | | | | | FOLIATION AT 60 DE GREES TO SUB- VERTICAL. IN GENERAL, MODERATEL CLOSE JOINT SPACING. |
| | | R3 | 28'-38' | | REC | | | | | | FROM 8' TO 15', PREDOMINANT JOINTS ARE 30-DEGREE JOINTS ACROSS FOLIATION. |
| ł | | | | 1 | | Dr | | | EYNOLD | • |)GPAL |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 2 3
LOCATION BRUNX, OF NY
HOLE NO MG-810-99
LINE & STA E: 674 505 15

| | TRACT | | | | 8 | UBSU | GACE | | ORATIO | | | N: 323, 422.92 OFFSEI E: 624, 505.15 |
|---------------------------|--|-----------|-------------------------|------------------------|--------------------|-----------------|--------------------|-----------------------------|------------|------------------------------|--------------------------|--|
| | L.9 | 9018 | | FOR: | METCA | LF&E | DDY- | HAZE | N AN | D SAWY | 'ER | , |
| CI PIH | | | I II CA I ALL CASING | ising out Out date: | DATE: | | _ DAI | E. START E. FINISH | | -18-99 -19-99 | G | COUND ELEVATION 193.13 COUND WATER ELEVATION 185.22 2/22/99 |
| C ASING SAMPL DIAMO | EN OU Z" | NQ | iD | | WEIGHI INSIDE L | of hai Ength | MIMER _ OF SAIM | | 0-14 24 | | _ LBS. ₽N. | HAMMER FALL |
| - 0 | CASING BLOWS PER FOOI | SAMPLE | SAMPLE (ELEV | | SAMPLE | 0-6 | ON SA | PER 6- MOPLER 12 · 18 | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFIL CHANG DEPTH | FIELD IDENTIFICATION |
| 40 | | | | | | | | | | | | FROM 15' TO 36', |
| | | | | - | | | - | | | | | PREDOMINANT JOINTS ARE 60-DEGREE FOLIATION JOINTS. |
| ٠ | | | | | | | | | | | 1 | AT 26.8' AND 27.5' |
| 50 | | <u>R4</u> | 38'-48' | | 100 | | REC | | - |] | | TWO 60-DEGREE FOLIATION JOINTS, |
| - 10 - | | | | | | | | | | | | SMOOTH, MICA. AT 34', A 60-DE- GREE FOLIATION |
| 0 | | | | | | | | | | | | JOINT STRONGLY OXIDIZED, SMOOTH. |
| ; | | R5 | 48'-58' | | 100 | z | REC | | | | | FROM 36' TO 50', PREDOMINANT JOINTS ARE 30-DEGREE |
| 60 -20 - | | | | | 100 | | RQI | | | | | JOINTS ACROSS FOLIATION. PYRITE PRESENT THROUGHOUT |
| | | | | | | | | | | | | FROM 50' TO 69', PREDOMINANT JOINTS ARE 30 TO 60-DEGRE |
| | | | | | | | | | | } | | JOINTS ALONG FOLIATION. |
| 70 -30 - | | R6 | 58' -68' | | 90% | % RQD | REC | | | | | AT 53.3', A 50- DEGREE FOLIATION JOINT, SMOOTH, |
| | | | | | | | | | | | | MICA. AT 54.2', A 50-DE- GREE FOLIATION |
| | | | | | | | | | | | | JOINT, DXIDIZED, SMOOTH. FROM 67.2' TO 68' |
| 80 | | . R7 | 68' -78' | | 96% 88% | REC RQD | | | | | 781 | 60-DEGREE FOLIATION |
| 40 - | <u>. </u> | <u></u> | 1 | | | | | | | <u></u> | <u> </u> | POSSIBLE SHEAR WIT |
| | ingineer: | | | | | | Ori | ller: _ | | YNOLDS | 2000 0 | |

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MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | 3 | of 3 |
|------------|---------|------------------|
| LOCATION_ | BRONX, | NY |
| HOLE NO. | MG-B10 |) -99 |
| LINE & STA | N: 323, | 422.92 |
| OFFSET | E: 624, | 505.15 |

| | IKACI | UED-94 | +3 | | | SUBSU | RPACE | EXPL | ORATIO | N | | E: 624, 505.15 |
|--------|---------------------------------------|----------|----------|----------|--------|-----------------|------------------|-----------------------|-------------|---------------------------|----------------------------|--|
| | L.9 | 9018 | | FOR: 1 | METCA | LF&E | DDY- | HAZE | N AN | D SAWY | ER | |
| Ut PIN | | H | H CA | SING OUT | DAIE | | | e. Stari e. Finish | | -18 -9 9 | 1 5/11 | DUND ELEVATION 193.13 DUND WATER ELEVATION 186.22 |
| AMP | G O D HW ER O D 2" OND BIT SIZE | | 1D | | WEIGH! | OF HA LENGIH | MMER _ OF SAM | 30 PLER _ | 00-14 24 | | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLER30" |
| | Casing Blows Per foot | SAMPLE | SAMPLE C | | SAMPLE | | ON S | PER 6 | | DENSITY OR CONSIST. | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION |
| υ – | | | | | ~ | 0.6 | 6 -12 | 12 18 | 18 - 24 | MOISTURE | OEPIH | _1 |
| | | | | | | | | | | | | A 30-DEGREE JOINT ACROSS FOLIATION, SMOOTH, CHLORITE. FROM 68.7' TO 69' |
| | | | | | | | | | | | | A 60-DEGREE FOLIATION JOINT, SMOOTH, CHLORITE. |
| 10 - | | | | | | | | | | | | BELOW 69', 20 TO 30-DEGREE JOINTS ACROSS FOLIATION PREDOMINATE. |
| | | | | | | | | | | | | FROM 76.2'TO 77.5 A 70-DEGREE FOLIATION JOINT, SMOOTH, EPIDOTE. |
| 20 - | | | | | | | | | | • | | CHLORITE WITH A 20-DEGREE JOINT ACROSS FOLIATION, ROUGH. |
| | | | | | | | | | | • | | IN GENERAL, GOOD ROCK. (1-65) |
| | | | <u> </u> | | | | | | | | | END OF HOLE 78' |
| 30 - | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | <u> </u> | | | | | | | | 1 | 1 | |

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MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEEL 1 OF 3
LOCATION BRONX, NY
HOLE NO MG-B11-99
LINE & SIA E: 624, 542.71

| CONT | TRACT H | HED-54 | 3 | | នប | DSUR | PACE | EXPLO | OF | E: 624, 542.71 | | | |
|--------|--|----------------|----------------|--------|----------|------------|---------|---------|----------|-------------------------------------|-----------|-----------------------|---|
| | L. 99 | 9018 | 280 | FOR: N | 1ETCAL | F&ED | DY-H | IAZEN | I ANI | SAW | /ER | | |
| | | | H C/ | | | | | | - | -12-99 -16-99 | | | ND ELEVATION 194.92 |
| SAMPL | 3 O.D. <u>HW</u> ER O.D <u>2"</u> IND 811 SIZE | | . ID | | WEIGHT (| | | | | 0 | LB! IA | | HAMMER FAIL CASING SAMPLER |
| | CASING 8LOWS PER FOOT | SAMPLE | SAMPLE ELEV | | SAMPLE | | BLOWS I | APLER . | 18 - 24 | DENSITY OR CONSIST MOISTUR | СН | OFILE ANGE EPTH | RELD IDENTRICATION OF SOIL |
| - 10 - | | | | | | | | | | | | ° | ANGLED BOREHOLE: DIRECTION N 8 DEGREES E ANGLE 60 DEGREES ROLLER BIT TO TOP OF ROCK NOTE: ALL DEPTHS SHOWN AS "DOWN-HOLE OR NON-VERTICAL |
| -20 | | R1 | 10'-20 | , | | REC RQD | | | | | | | GNEISS. MEDIUM GRAY. SCHISTOSE, AMPHIBOLITIC BANDS MODERATELY HARD TO HARD, FAIRLY WEATHERED TO UN- WEATHERED. FOLIATION VARIES FROM SO DEGREES TO SUBVERTICAL, MOSTL AT 70 DEGREES. OXIDATION ON JOINT TO 17'. |
| -30 | | R2 | 201-30 | • | | REC ROD | | | | | | | FRACTURED FROM 10' TO 17'. FROM 14' T 15', AN 80-DEGREE FOLIATION JOINT, SOFT, OXIDIZED, ROUGH, OPEN. (3-65) |
| | | R3 | 30'-40 |)' | | - 2 | REC | | | | | | MODERATLEY CLOSE JOINT SPACING FROM 17' TO 55'. FROM 21.75' TO 22.5', A 80-DEGREE FOLIATIO JOINT, ROUGH, TIGHT. |
| -40 | | - L | | - | | ROI | | | <u> </u> | ireg M | | IFV | TR. |
| | | | | | | | | | | HEO F | | | |
| تت | | | | | | | | ··· | | | | | |

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MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc. SUBSURFACE EXPLORATION

SHEEL Z OF 3
LOCATION BRUNX, NY
HOLE NO. MG-B11-99
LINE & SIA N: 322, 906.15
OFFSEL E: 624, 542.71 OFFSET _

| ASING WAPU | OD HW 2" | | ALL CASING OU! DATE | WEIGHI | OF HAM | MER | 30 | 0-14 | 0 | . 1 8 5. | GROUND WATER ELEVATION | | |
|----------------|-----------------|---------------|---------------------|---------|----------------|-------|-------------|---------------|---------------------|---------------------|---|--|--|
| AMO | CASING BLOWS | SAMPLE DEPIHS | | SAMPLE | BLOWS ON SA | | | DENSITY OR | PROFI | SELD IDENTIFICATION | | | |
| | PER FOOI | A D | ELEA + LEEL | S S S I | 0 - 0 | 6 -12 | 12 - 18 | 18 - 24 | CONSIST MOISTURE | DEPT | UE 4UII | | |
| o - | | | | | | | | | | | AT 32.5', A 50- DEGREE JOINT WITH FOLIATION TREND, SMOOTH, TIGHT, ALTERATION IN EPIDOTE. FROM 48' TO 48.5', A | | |
| | | | | 1 | _ | | | | | | 70-DEGREE FOLIATI | | |
| 50 10 - | | R4 | 40'-50' | | REC RQD | | | | 1 | | JOINT, SMOOTH, | | |
| | | | | | | | | | | | AT 51', A 30-DEGR JOINT WITH FOLIATION TREND, SMOOTH, TIGHT. AT 52', A 30-DEGR JOINT ACROSS | | |
| 50 -20 | | R5 | 50'-60' | 100 | % RQD | REC | | | | | FOLIATION, SMOOTS TIGHT. AT 53', A 30-DEGREE JOINT ACROSS FOLIATION ROUGH, TIGHT, CARBONATE COATING (2-65) | | |
| 70 | | | | | · | | | | - - - - | | MODERATELY CLOSE WIDE JOINT SPACE BELOW 55'. AT 61.8', A 60-DEGR | | |
| - 30 | | R6 | 60'-70' | | REC RQI | | | | | | JOINT ACROSS FOLIATION, ROUGH ALTERATION IN | | |
| | | | | | | | | | | | CHLORITE, CARBON COATING. FROM 65.5' TO 65.8', AT 70-DEG | | |
| 80 | | R7 | 70'-80' | | REC | | | - | - | | FOLIATION JOINT, SMOOTH, TIGHT. | | |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc. SUBSURFACE EXPLORATION

SHEET 3 OF 3
LOCATION BRONX, NY
HOLE NO MG-B11-99
UNE & STA N: 322, 906.15
OFFSET E: 624, 542.71

| CASING REC REQ SAMPLE DEPINS REC REQ REQ REQ REC REQ REC REQ REC REQ REC REQ REC REQ REQ REC REQ REC REQ REC REQ REC REQ REC REQ REQ REC | | | 9018 | FOR: | THE FUHL | _r &E.U | חא – ו | AZE | N ANI | SAWY | <u>.</u> K | | |
|--|------|--------------|----------------|-----------|----------|---------|------------------|--------------|--------------|----------|------------|------|-------------------------------------|
| NAMER OF DEPTH NAME | | | | | | | | | - | | | | 9-2 9-33-3 |
| FROM 70' TO 70' THE FOLIATION JUINTS AT 70 DEGREES, ROUGH OPEN, ALTERATI IN CHLORITE. F 74.5' TD 75.6' 80-DEGREE JUIN ACROSS FOLIATI ROUGH, OPEN, ALTERATION IN CHLORITE. F 80' S62' ROD CHLORITE. F 80' S62' ROD CHLORITE. F 80' S62' ROD CHLORITE. F 80' S62' ROD CHLORITE. F 80' S62' ROD CHLORITE. F 80' S62' ROD S62' ROD CHLORITE. F 80' S62' ROD S62' ROD S62' ROD S62' ROD S62' ROD S62' ROD S63' ROD S64' ROD S64' ROD S65' ROD S65' ROD S66' ROD S | MP | ER O.D.2" | | | | | | | | | | CASI | HAMMER FALL NG SAMPLER |
| FROM 70' TO 70' THE FOLIATION JUINTS AT 70 DEGREES, ROUGH OPEN, ALTERATI IN CHLORITE. F 74.5' TD 75.6' 80-DEGREE JOIN ACROSS FOLIATI ROUGH, OPEN, ALTERATION IN CHLORITE. F 80' -90' 98% REC ROUGH, OPEN, ALTERATION IN CHLORITE. F 80' -90' 98% REC ROUGH, OPEN, ALTERATION IN CHLORITE. F 80' -90' 98% REC ROUGH, OPEN, ALTERATION IN CHLORITE. F 80' -90' 98% REC ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', BO-DEGREE FOLI JOINT, SMOOTH, CARBONATE COAT (1-65) R10100'-105' 100 % REC 105' END OF HOLE 16' END OF HOLE 16' | | BLOWS | AMPLE UMBER | | AMPLE | | | | | OR | CHAN | iG£ | FIELD IDENTIFICATION OF SOIL |
| FROM 70' TO 70. TMD FOCLATION JDINTS AT 70 DEGREES, ROLGH OPEN, ALTERATI IN CHLORITE. F 74.5' TD 75.6' 80-DEGREE JOIN ACROSS FOLIATI ROUGH, OPEN, ALTERATION IN CHLORITE. FROM 84' TO 85', A DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, SMOOTH, CARBONATE COAT (1-65) R10100'-105' 100 % REC 100' -30 END OF HOLE 10 | ۰ ــ | PER ROOI | νz | _ | S A | 0.6 | o ·l2 | 12 - 18 | 18 - 24 | MOISTURE | DEP | TH | |
| OPEN, ALTERATION CHLORITE, F74.5' TO 75.6' 80-DEGREE JOIN ACROSS FOLIATI ROUGH, OPEN, ALTERATION IN CHLORITE, FROM 887 ROD BOY-100' 987 REC BO | | | | | | | | | | | | | JOINTS AT 70 |
| IN CHLORITE. F 74.5' TO 75.6' 80-DEGREE JOIN ACROSS FOLIATI ROUGH, OPEN, ALTERATION IN CHLORITE. FROM 84' TO 85', A DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI ROUGH, OPEN, ALTERATION IN CHLORITE. FROM 84' TO 85', A DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN CHLORITE. FOLIATION IN | | | | | | | | | | | | | DEGREES, ROUGH, OPEN, ALTERATION |
| 80-DEGREE JOIN ACROSS FOLIATI ROUGH, OPEN, ALTERATION IN CHLORITE. FROM 84' TO 85', A DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLIATI JOINT, SMOOTH, CARBONATE COAT (1-65) R10100'-105' 100 % REC 100 % RgD END OF HOLE 16 | | | | | | | - | | - | | | 1 | IN CHLORITE, FROM |
| RB 80'-90' 98% REC | 0 | | | | | - | | | | } | ł | - 1 | 80-DEGREE JOINT |
| CHLORITE, FROM 84' TO 85', A DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE, F 95.2' TO 96', 80 DEGREE FOLIATI JOINT, SMOOTH, CARBONATE COAT (1-65) R10100'-105' 100 % REC 105' R10100'-105' 100 % REC 105' END OF HOLE 16 | | | R8 | 80'-90' | | | | | |] | Ì | i | ROUGH, OPEN, |
| 84' TO 85', A DEGREE FOLIATI JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', 80-DEGREE FOLI JUINT, SMOTH, CARBONATE CDAT (1-65) R10100'-105' 100 % REC 100 % RQD END OF HOLE 16 | | | - | | 887 | RQD | ore | - | | 1 | | | |
| JOINT, ROUGH, TIGHT, ALTERAT IN CHLORITE. F 95.2' TO 96', BO-DEGREE FOLI JUINT, SMOOTH, CARBONATE COAT (1-65) R10100'-105' 100 % REC 105' R10100'-105' 100 % RQD 110 END OF HOLE 16 | | | | | | | | | ļ | | | - 1 | 84' TO 85', A 75- |
| IN CHLORITE, F 95.2' TO 96', 80-DEGREE FOLI JOINT, SMOOTH, CARBONATE COAT (1-65) R10100'-105' 100 % REC 105' R1010 % RQD 105' END OF HOLE 16 | | | | | | | | | L | 1 | 1 | | |
| 95.2' TO 96', BO-DEGREE FOLI JUINT, SMOOTH, CARBONATE COAT (1-65) R10100'-105' 100 % REC 100 % RQD 110 END OF HOLE 16 | | | | | | | | | [| - | 1 | ſ | TIGHT, ALTERATION |
| R10100'-105' 100 % REC 105' R10100'-105' 100 % REC 105' END OF HOLE 16 | | | | | | | | | | 1 | | - 1 | 95.2' TO 96', AN |
| 96% RQD CARBONATE COAT (1-65) R10100'-105' 100 % REC 105' 100 % RQD END OF HOLE 16 | - | | PQ | 901-1001 | 99* | PEC | | | + | - | | ł | BO-DEGREE FOLIATI |
| 110 | · 20 | | | | | | | | |] | | | CARBONATE COATING |
| 110 | | | | | | | | | | | 1 | ļ | |
| 110 END OF HOLE 16 | | | R10 | 100'-105' | | | Francisco (2007) | | |] | 10 | 5' | |
| | | | | | | | Kigi | 1 | | 1 | | | |
| | 11 | d | | | | | | | | _ | | | END OF HOLE 105' |
| 120 | - 30 | + | + | + | | | | ┼ | + | - | | | |
| 120 | | | | | | | _ | | | 4 | - | | |
| 120 | | | | | | | | | | Ⅎ | ļ | | , |
| 120 | | | - | | | | - | - | | | | | |
| 120 | | | | | | 1 | | | | _ | | | |
| | 12 | 20 | | | | | | <u>.</u> | | _ | | | |
| -40 · · · · · · · · · · · · · · · · · · · | 1 | 1 1 1 1 1 1 | | | | | | I_{-} | | | | | <u> </u> |
| | Ori | ling Inspect | tor: | | | | Н | letper: | 1 | HEO RO | DRI | GUEZ | |

MOSHOLU GOLF COURSE

WGI Warren

SHEET 1 STORY OF STOR

| VAN | CORTL | ANDT | | 3 | 11/ | JL | Ge | orge I | nc. | 1 | HOLE NO MG-812-99 | | | |
|--------|--|--|--|-------------|----------------|--------------|--|-----------|--------------|---------|---|--|--|--|
| CON | TRACT | HED-5 | 43 | | | UBSU | RPACE | EXPL | ORATIO | L l | N: 323, 064.12 OFFSEI E: 624, 562.82 | | | |
| | | | | | _ | | | | 13000 1300 | | | OFFSE! | | |
| | L.9 | 9018 | | FOR: M | IETCAI | LF&E | DDY- | HAZE | N AN | D SAWY | ER | <u>k</u> | | |
| MPH | | r | ! II С/ | ASING OUI | DATE | | _ DAII | . SIART | 2 | -16-99 | GO | OUND ELEVATION 195.19 | | |
| DI PIH | | <u> </u> | I ALL CASING | OUT DAIE | | | DAN | , FINISH | 2 | -17-99 | GR | OUND WATER ELEVATION 185.39 | | |
| CASIN | S OD HW | a · | | - | | | | | ~ | | - ' | | | |
| SAMP | 8 OD 2" | | _ ID | | WEIGHT | OF HAI | MMER _ | 30 | 24 | 0 | _ LBS | HAMMER FALL CASING 24" SAMPLER30" | | |
| DIAMO | OND BIT SIZE | NQ | —··· —— | | INSIDE L | ENGIH | OF SAM | PLER _ | | | IN. | CASING 24" SAMPLERSO" | | |
| - | | | | | | | | | | | | | | |
| | CASING | ₩ & | | | ≿ | | BLOWS | PER 6 | | DENSITY | PROFIL | | | |
| | BLOWS | SAMPLE | SAMPLE I | | ₹ 8 | | | MPLER | | OR | CHANG | FIELD IDENTIFICATION | | |
| , | PER FOOT | 3 Z | | ree: | SAMPLE | 0.6 | 6 .12 | 12 - 18 | 18 . 24 | CONSIST | DEPTH | OE 800 | | |
| - 0 - | | | | | - | | - 1 | 12 - 10 | 10 - 20 | | 0'- | 700001 | | |
| | | SSI | 0'-2' | | 12" | 2 | 2 | 3 | 4 | | 2, | TOPSOIL (4"). DARK GRAY SILTY SAND, | | |
| 1 | | L | | | | | | , | | 1 | ~ | ORGANIC MATTER. | | |
| 8 | | SS2 | 2'-4' | | 14" | 3 | 4 | 6 | 6 |] | ľ | LOOSE TO MEDIUM | | |
| | | cen | 4'-6' | | | <u> </u> | | | | | <u> </u> | DENSE.(SM) (11-65) | | |
| | | The second second second second | 6'-6.7' | | 15" 4" | 63 | 8 | 10 /2" | 11 | - | | RUSTY BROWN SILTY | | |
| | | | 8'-8.2' | | 2" | 100 | | | | 1 | 7' | FINE SAND, TRACE T | | |
| | | | | | | 200 | 7.5 | | | 1 | | SOME GRAVEL, MEDIU DENSE. (SM) (6-65) | | |
| - 10 - | - | | | | | | | | | 1 | - | TAN BROWN SILTY F- | | |
| | <u> </u> | | | | | | | | | | ł | SAND WITH MICA, ROC | | |
| | | | | | | - | | | | 1 | 12' | FRAGMENTS (GNEISS) | | |
| | | | | | +- | | | | | 1 | 1 | COBBLES. VERY | | |
| | | | | | 1 - | | | - | | 1 | 1 | DENSE. POSSIBLY SAPROLITIC SOIL | | |
| | | | | | | | | | | 1 | 1 | (DECOMPOSED ROCK). | | |
| | | R1 | 12'-17' | | 100 | | REC | | | 1 | | (SM AND GM) (6-65) | | |
| | | ├─ - | | | 50% | RQD | <u> </u> | | | J | | ROLLER BIT FROM | | |
| | | | | | + | | | | <u> </u> | 1 | | 8.2' TO TOP OF ROC | | |
| 20 - | | | i | | 1 - | | _ | | | 1 | | CHETCE MEDIUM COAV | | |
| | | | | | | | | | 1 | 1 | | GNEISS.MEDIUM GRAY MODERATELY HARD TO | | |
| | \ | | | | | | | | | 1 | | HARD, MODERATELY | | |
| | | R2 | 17'-24. | <u>5'</u> | | REC | | | |] . | | WEATHERED TO UN- | | |
| | | | | | 49% | ROD | - | | | 4 | | WEATHERED. OXIDATIO | | |
| | | | | | + | | | <u> </u> | ├ | 1 |] | ON JOINTS TO 26.5 | | |
| | | | | | | | | | ┼ | 1 | | QUARTZITIC BANDS | | |
| | | - | <u> </u> | | | | | | (E) (I) | 1 | - | FROM 12' TO 14'; | | |
| - 30 · | | | | | | ļ | | | , |] | | FOLIATION AT 70 | | |
| l | - | PO | 24.5'-3 | | + | | | | | 4 | | DEGREES TO SUB- | | |
| ļ | | 1 | 24.5 | 12. | 100 | RQD | REC | | | 4 | | VERTICAL AND AT 50 | | |
| 1 | | | | | 1 23/ | KOL | 1 | | | 1 | | DEGREES FROM 40' T | | |
| ļ | | | | | | | | | t^- | 1 | 1 | 55' AND 65' TO 71' | | |
| ļ | | <u> </u> | 1 | | | | | | |] | 1 | FRACTURED AND | | |
| | | 1 | | | <u> </u> | | | | |] | 1 | OXIDIZED FROM 12'T | | |
| | | + | | | + | | | <u> </u> | 1 | 4 | | 14.5' AND FROM 17' | | |
| 40 | | | - | | + | - | - | | - | - | 1 | TO 24.5', WITH | | |
| T** | | | | | - | | | 1 | L . | ш | | CLOSELY SPACED | | |
| Soil | Engineer: _ | | | | | | ρ. | llar | Gl | JS SUR | I | | | |
| | | | | | | | Un | ller: | | , | T. | | | |

| ou pigneer: | Order: | ans sout | |
|---------------------|---------|-----------------|------|
| | | | - |
| Drifting Inspector: | Helper: | STEVEN LUEDDEKE | |
| | | | |

Offling Inspector:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEFT 2 OF 3
LOCATION BRONX, NY
HOLE NO. MG-B12-99
UNE & SIA N: 323, 064.12
E: 624, 562.82

| CUN | IRACII | | - S | UBSU | FACE | EXPL |)RATIC | N N | l | OFFSEI E: 624, 562.82 | | |
|------------------|-------------------------------------|--|--------------|---------------------------------------|--|-----------------|------------------|------------------------------|--------------------------|-------------------------|---------------|--|
| | L.9 | 9018 | | FOR: N | (ETCAL | .F&E | -YQQ | HAZE | N AN | D SAWY | ER | |
| OI PIH OL PIH | | ! | I H CA | ISING OUI OUI DAIF | DAIF | | DAII | . SIART. | 2 | -16-99 -17-99 | Gr | ROUND ELEVATION 195.19 ROUND WATER ELEVATION 186.39 |
| SAMPL | G OD HW ER OD 2" OND BIT SIZE | | 1.D | | WEIGH! INSIDE L | OF HAI ENGIH | MMER _ OF SAM | | 0-14 24 | | _ LBS. tN. | HAMMER FALL |
| | CASING 8LOWS PER FOOT | DEPTHS FEET | SAMPLE | SAMPLE RECOVERY 0 | | PER 6" | | DENSITY OR CONSIST. MOISIURE | PROFIL CHANG DEPTI | GE FIELD IDENTIFICATION | | |
| - 0 - | | | | | ~ | 0.8 | 0.12 | 12 - 18 | 18 - 24 | AIO GIORE | <u> </u> | JOINTS. |
| | R4 32'-42' | | | | 100 95% | % RQD | REC | | | | | |
| | | | | - | | | | | | | | FOLIATION JOINTS PREDOMINATE TO |
| | | | | | - | | | 18.00 | | | Ì | 14.5', SUBHORIZONT AL JOINTS PREDOMINATE FROM |
| 50 - 10 - | | | | · · · · · · · · · · · · · · · · · · · | | | | | | • | | 14.5' TO 27'. FROM 23.5'TO 24,2' |
| - 10 | | R5 | 42'-52' | | 100 | 7 | REC | | | | | A 70-DEGREE FOLIATION JOINT, |
| | | | | | 937 | RQI | | | | } | | OXIDIZED, SMOOTH, OPEN WITH TWO 5 TO |
| | | | | | | | | | | 1 | | 10-DEGREE JOINTS, OPEN, ROUGH. (3-65) |
| 60 | | | | | | | L | | | 1 | | ROCK QUALITY IM- PROVES BELOW 27', |
| -20 | | | | | | | - | | - | - | | UNWEATHERED, MODERATELY CLOSE T WIDE JOINT SPACING |
| | | R6 | 52'-62' | | | Z RQI | REC | - | - | 1 | | AT 46.5', AN 80-DI |
| | | | | | | - 1 | | - | | 1 | | GREE FOLIATION JOINT, SMOOTH, |
| | | | | | | | | | | 3 | | TIGHT, CHLORITE. |
| 70 | | | | | | | | | | · | | AT 75.7', A 60-DE |
| -30 | | RZ | 52'-71 | - | | REG | | | | ₫ | | JOINT, ROUGH, OPE AND A 60-DEGREE |
| | | | | | 98 | RQ | | <u> </u> | + | _ | | JOINT ACROSS FOLIATION, SMOOTH |
| Î | | - | + | • | + | <u> </u> | - | 1 | | - - | | OPEN. AT 76.9', A 60-DE GREE FOLIATION |
| | - | | | | | 1- | ‡ | | | 4 | | JOINT, ROUGH, |
| 80 | | | | | | 1 | 1 | | | | | 7 45 5641 7 1 11 |
| | Engineer: | | | | | | | | F. | ius suf | | |
| 304 | CINGO POPER | | | | | | [| riller: _ | = | | | |

STEVEN LUEDDEKE

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| | | | IFC. | OK: | | - ALL | ייים עול | 11126 | A MIAT |) SHWY | | |
|------------|--------------------------------------|--------|-------------------------|---------|--------------------|-------|----------------|-----------|-------------|------------------------------|---------------------------|---|
| DEPIH | | t: | H CASING OUI | C OUI L | DAIE | | DAIE | SIARI: | | -16-99 -17-99 | GRC | OUND ELEVATION 195.19 OUND WATER ELEVATION 2/22/39 |
| SAMPLI | 80.0 HW ER O.D 2" END BIT SIZE | | _ ID | | WEIGHI INSIDE L | | | | 0-140 24 | | . 18\$ IN, | HAMMER FALL CASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPT ELEV FEE | 1270 | SAMPLE RECOVERY | 0.6 | BLOWS ON SA | | 18 . 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANG DEPTH | FIELD IDENTIFICATION |
| 90 -10- | | RB | 717-81.57 | | | REC | | | | | 81.5 | AT 77.5', A 60-DE- GREE JOINT WITH FOLIATION TREND, SMOOTH, TIGHT, CHLORITE. AT 77.8', A 40-DE- GREE JOINT WITH FOLIATION TREND, ROUGH, TIGHT. AT 79.2', A 60-DE- GREE JOINT WITH FOLIATION TREND, SMOOTH, CHLORITE, EPIDOTE, TIGHT. FROM 81' TO 81.5', A SUBVERTICAL FOLIATION JOINT, SMOOTH, TIGHT. (1-65) END OF HOLE 81.5' |
| 12 -40 | | | | | | | | | | | | |
| Soil | Engineer: | | | | | • | Dr | riller: _ | Gi | JS SUR | Ι. | |
| Ortil | ing Inspect | ж: | <u> </u> | | · <u> </u> | | н | elper: _ | S | TEVEN | LUEDI | DEKE |
| - | 49 (1979) | | | | | | | | | | | |

WGI Warren George Inc.

SHEET BRUNX, OF NY
LOCATION MG-B13-99
HOLE NO N1323, 264.15
LINE & SIA E: 624, 587.04

| CON | IKHOII | ינייים | 70 | | 81 | BSUR | FACE | EXPLA | RATIO | N | l | Offset E:624,587.04 |
|--------------------------|---------------------------------------|----------|----------------|-----------------------|------------------|---------------|-------------------|---------|------------|--------------------------------------|---------------------------|--|
| | L.9 | 9018 | | FOR: | 1ETCAL | F&E | י-Yמכ | HAZE | ER | | | |
| () PIH () PIH | | #! #! | I H C/ | ISING OUI OUI DAIE | DAIF | | DAIE | SIARI- | 2 | -10-99 -11-99 | GR | OUND ELEVATION 195.97 DUIND WATER ELEVATION 186.81 |
| CASINI SAMPL DIAMO | S OD HW ER OD Z''' OND BIT SIZE | NQ | _10 | | MEIGHI MEIGHI | OF HAM | IMER _ OF SAME | 30 | 0-14 24 | | LBS. | HAMMER FALL CASING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE ! | | SAMPLE | - | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFILI CHANG DEPTH | FIELD IDENTIFICATION |
| -0- | | | 0'-2' | | 12" | 4 | 4 | 3 | 2 | | 0'- 2' | TOPSUIL (4"). DARK BROWN SILTY SAND, ORGANIC MATTER. |
| | | | 21-41 41-61 | | 14" | 7 | 5 15 | 6 49 | 7 60 | 8 | | RUSTY BROWN SILTY FINE SAND, TRACE |
| | | | | | | _ | | | | ľ | 7' | FINE TO MEDIUM GRAVEL. MEDIUM DENSE TO VERY |
| - 10 - | | | | | | | | | | | - | DENSE. (SM) (7-65) GNEISS. MEDIUM |
| | | <u> </u> | 7'-13' | | 98% | | REC | | | | | GRAY, HARD, GENERALLY UNWEATHERED. OXIDATION ON JOINT |
| | | | | | | | | | | | 1 | TO 42'. |
| - 20 | | | | | | | | | | | | FOLIATION AT 60 TO 80 DEGREES |
| | | R2 | 13'-23' | | | REC | | | | | | FROM 7' TO 30'; AT 20 TO 50 DEGREES FROM 30' TO 40' AN 50' TO 60'; |
| | | | | | | | | | | - - - | | AT 70 DEGREES TO SUBVERTICAL FROM 40' TO 50' AND |
| -30 | | | 23'-33 | | | | | | | | | BELOW 60'. |
| i. | | R3 | 23, ~33 | | 887 | RQD | REC | | | | 8 | IN GENERAL, MODERATELY CLOSE 1 WIDE FRACTURE SPACING; MODERATE |
| | | | | | | | | | | | | LY CLOSE TO CLOSE FROM 40' TO 50'. SUBHORIZONTAL |
| Soli | Engineer: | | <u> </u> | | _ | | Ľ | iler: | R | EYNOLD | S BR | <u> JOINTS PREDOMINAT</u> IDGPAL |
| Dett | ng inspecto | ٠ | | | | | | daar | А | LVRO L | ONDO | N |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 2 OF 3
LOCATION BRONX, NY
HOLE NO MG-B13-99
LINE & STA E: 624, 587.04

| | L.9 | 9018 | | FOR: 1 | – METCA! | F&F | -צמס | HA7 | EN | ΔN | ID SAWY | FR | OFFSET |
|--------------------------|--------------------------------------|---------------|----------|----------|--------------------|-------------------|-------------------|---------|-----|-----------|------------------------------|-----------------------|---|
| DI PIH DI PIH | | F | I H CA | SING OUI | DAIE | | DAI | . SIAS | RI: | 2 | -10-99 -11-99 | | ROUND ELEVATION 186.81 |
| CASINI SAMPU DIAMO | S OD HW ER O.D 2" OND BIT SIZE | NQ | _ ID | | WEIGHI INSIDE L | OF HAN ENGIH (| JULER _ OF SAM | | | -14 24 | | LBS. | HAMMER FAU. |
| | CASING BLOWS PER FCOI | MPLE IMBER | SAMPLE (| DEPTHS | SAMPLE | 0.6 | BLOWS ON SA | MPLEA | | 1.24 | DENSITY OR CONSIST. MOISTURE | PROFI CHAN DEPT | IGE FELD IDENTIFICATION |
| - 0 - | | | | | | 0.0 | 0 12 | 12.1 | - 1 | - 24 | | - | |
| 40 | | R4 | 33'~43' | | 100 95% | % RQD | REC | | + | | | | |
| | | | | | | | | | + | | | | AT 19', A 60-DEGR FOLIATION JOINT, OXIDIZED, ROUGH, |
| 50 | | | | | | | | | - | | † - - | | TIGHT, AT 28.5', A 60-DEGREE JOIN'S ACROSS THE |
| – 10 – | | DE | 401 501 | 100 | | | | | 1 | | | | FOLIATION, OXIDIZED, ROUGH, |
| | | KO | 43' -53' | | 83% | ROD | REC | | 1 | _ | | | TIGHT. AT 43',AT 60-DEG JOINT WITH FOLIA- |
| | | | | | | | | - | + | - | | | TION TREND, ROUGH TIGHT, CHLORITE ALTERATION. AT 49 |
| 50 -20 · | | | | | | | 2 | | | | | | A 60-DEGREE FOLIATION JOINT, ROUGH, IRREGULAR |
| | | R6 | 53'-63' | | 100 | % RQI | REC | | | | - - - | | TIGHT. FROM 43' 45', ROCK IS JOINTED WITH JOIN |
| | | | | | | · | | | 1 | | | | 7" APART. GOOD ROCK BELOW |
| 70 | | | | | | | | Ė | 1 | | | | 45'. FROM 76' TO 77.5', A SUB- VERTICAL JOINT |
| - 30 | | | | | | | | | + | | | | ACROSS FOLIATION IRREGULAR, TIGHT ROUGH. |
| | | R7 | 63' -73' | | | REC | | | + | | | | (1-65) |
| | | | | | | | | | 1 | | | | |
| 80 | | | — | | + | - | | | 1 | | 1 | | |
| | Engineer: | | | | | | | filler: | | | EYNOLD | | RIDGPAL |

Warra

BRUNX OF NO SHEET ___

| VAN | HULU G I CORTL ITRACT | ANDT | PARK | | | W | | | orge l | | | HOLE NO MG-B13-99 LINE & SIA N: 323, 264.15 |
|--------------|-----------------------------|---------------|----------------|-------------|--|----------|---------|----------------------|---------------|----------------|----------------|---|
| • | | 9018 | | | • | - | | | ORATI | ON ID SAWY | - 1 | LINE & SIA H: 323, 264.15 OFFSET E: 624, 587.04 |
| DIPH | | - | | FOR: | | | 1 | | EN AN | ID SAWY | ER | |
| DEPH | 1 | | FI FI CA | OUI DATE | DAIE _ | | _ DAI | E. SIAR E. FINISI | · -2 | 2-10-99 | eu Gu | COUND ELEVATION 195.97 COUND WATER ELEVATION 185.81 |
| CASIV | 6 0.0 HW | <u> </u> | ID | | WEIGH | OF HA | MIMER . | | 00-14 | | _ tBS. | HAMMED EAST |
| DIAM | OND BIT SIZE | NQ | | | INSIDE | LENGIH | OF SAM | PLER _ | 24 | | IN. | CASING 24" SAMPLER 30" |
| | CASING BLOWS | P.E. | SAMPLE (| DEPTHS | ERY ERY | | BLOW | PER 6 | | DENSITY | PROFIL | E |
| | PER FOOT | SAMPLE | ELEV / | | SAMPLE | | , | AMPLER | | OR CONSIST. | CHANG | FELD IDENTIFICATION |
| - 0 - | | | | | = | 0.6 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | DEPIH | OF 304 |
| 80 | | DO | 73'-83' | | 1 | | | | | | | |
| | | | /3 -63/ | | 98% | REC | | | - | | 83' | |
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| 120 | | | | | | | [| - | | | i | |
| -40 - | | | <u> </u> | | | | | | | | | |
| Sof E | ngineer: | | | | | | Dain | er: | RE | YNOLDS | BRI | DGPAL |
| Dritting | Inspector: | | | | | | Heli | _ | AL | VRO LO | NDON | |

- Helper: _

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc. SUBSURFACE EXPLORATION

SHEEL 1 OF 3 LOCATION BRONX, NY HOLE NO MG-B14-99 LINE & SIA N: 323, 436.44 OFFSEL E: 624, 605.98 1 SHEE! ___ OFFSET ___

| CASING BLOWS PRE CONSTRUCTION PRED DENIFFCATION CONSTRUCTION CONSTR | | L. 3 | 9018 | | FOR: N | 1ETCAL | _F&E | DDY- | HAZE | N AN | D SAWY | ER | |
|--|---------|-------------|--------------|--------------|----------|--------------------|---------|-------|--|---------|------------------|---|--|
| NOME SAMPLE DEMONOR BY SET NOME SAMPLE DI PIN | | , , | F FI CA | SING OUI | DAIE | | DAN | . SIART | 3 | -1-99 -3-99 | | |
| O' - ANGLED BOREHOLE | SAMPL | er od 🚄 | | . 1D | | | | | | | | 10 NOTE: 10 | HAMMER FALL CASING SAMPLER |
| O' - ANGLED BOREHOLE | | BLOWS | SAMPLE | | | SAMPLE | | ON SA | MPLER | | OR : CONSIST. | CHANGE | FIELD IDENTIFICATION |
| DIRECTION: S 8 DE. GREES W ANGLE: 60 DEGREES NOTE: ALL DEPTHS SHOWN AS "DOWN-HOLE" OR 9', NON-VERTICAL) GREISS. LIGHT TO MEDIUM GRAY. GREISS, LIGHT TO MEDIUM GRAY. GREISS, SB' TO 18.5', 58' TO 61', 80' TO 86', 90.5' TO 91.5' (BAND); BIDTITE GRAMD); BIDTITE GRAMD); BIDTITE GRAMD); BIDTITE FROM 40 DEGREES TO FOLIATION VARIABLE FROM 40 DEGREES TO VERTICAL. VORIDATION ON JOIN TO 32'. FROM 15' TO 29' A 35' TO 45', 20 TO 30' AND 60-DEGREE JOINTS ACROSS FOLIATION ARE PRE DOMINANT, ROUGH, OXIDITED FROM 32' TO 27'.5' MODERATELY JOINTED FROM 9' TO 23' AN 27.5' TO 98.5'. SOF Brofree: ONDER: GREG MARNEY | - o - | | | | | ~ ~ | 0.0 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | | |
| GREES W ANGLE: 60 DEGREES NOTE: ALL DEPTHS SHOWN AS "DOWN-HOLE" OR "DOWN-HOLE" OR "DOWN-HOLE" IN MEDIUM GRAY. UNIVERSITY TO 18.5', 58' TO 18.5', 58' TO 61', 80' TO 86', 90.5' TO 91.5' (BAND); BIOTITE GRAND; BIOTITE GRAND; BIOTITE GRAND; BIOTITE GRAND; BIOTITE GRAND; BIOTITE CONTROL R2 15'-25' 91% REC R2 15'-25' 91% REC R3 25'-35' 100 % REC R3 25'-35' 100 % REC R3 25'-35' 100 % REC R3 25'-35' 100 % REC GREE FOLIATION DINT, ROUGH, TIGHT. AT 26.5', A 60-DE GREE FOLIATION GREES TOLIATION FOUNDMENT, ROUGH, TIGHT. AT 26.5', A 60-DE GREE FOLIATION FROM 9' TO 23' AN 27.5' TO 98.5'. S08 Engineer. ONDER: GREEG MARNEY | | | | | | | | | | | | 0'- | ANGLED BOREHOLE |
| GNEISS. LIGHT TO MEDIUM GRAY. QUARTZITIC FROM 1: TO 18.5', 58' TO 61', 80' TO 86', 90.5' TO 91.5' (BAND); BIDTITE GNEISS FROM 74.5' TO 80'. FOLIATION VARIABLE FROM 40 DEGREES TO VERTICAL. OXIDATION ON JOIN TO 32'. FROM 15' TO 29' A 35' TO 45', 20 T 30 AND 60-DEGREE JOINS ACROSS FOLIATION ARE PRE DOMINANT, ROUGH, OXIDIZED, TIGHT. AT 26.5', A 60-DE GREE FOLIATION PROM 23' TO 27.5' MODERATELY JOINTE FROM 23' TO 23' AN CLOSELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTE FROM 9' TO 23' AN 27.5' TO 98.5'. DOME: GREG MARNEY | | | | | | | | | | | | ۵, | ANGLE: 60 DEGREES. NOTE: ALL DEPTHS SHOWN AS "DOWN-HOLE" OR |
| MEDIUM GRAY. QUARTZITIC FROM 1: TO 18.5', 58' TO 61', 90' TO 86', 90.5' TO 91.5' (BAND); BIOTITE GNEISS FROM 74.5' TO 80'. FOLIATION VARIABLE FROM 40 DEGREES TO VERTICAL. QXIDATION ON JOIN TO 32'. R2 15'-25' 91% REC B37 RDD FROM 15' TO 29' A 35' TO 45', 20 TO 30 AND 60-DEGREE JOINIS ACROSS FOLIATION ARE PRE DOMINANT, ROUGH, QXIDIZED, TIGHT. AT 26.5', A 60-DE GREE FOLIATION PROM 23' TO 27.5' MODERATELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTE FROM 9' TO 23' AN 27.5' TO 98.5'. Sof Engineer: Online: GREG MARNEY | - 10 - | | | | | | | | | | | 3 | NUN-VERTICAL) |
| SZZ RGD SZZ | | | | | | | | | | | | : | MEDIUM GRAY. QUARTZITIC FROM 15 |
| B27 RQD 90.5' TO 91.5' (BAND); BIOTITE GNEISS FROM 74.5' TO 80'. FOLIATION VARIABLE FROM 40 DEGREES TO VERTICAL. OXIDATION ON JOIN TO 32'. FROM 15' TO 29' AI 35' TO 45', 20 TO 30' AND 60-DEGREE JOIN'S ACROSS FOLIATION ARE PRE DOMINANT, ROUGH, OXIDIZED, TIGHT. AT 26.5', A 60-DE GREE FOLIATION ARE GREE FOLIATION ARE FROM 15' TO 29' AI 35' TO 45', 20 TO 30' AND 60-DEGREE JOIN'S ACROSS FOLIATION ARE PRE DOMINANT, ROUGH, TIGHT. AT 26.5', A 60-DE GREE FOLIATION JOINT, ROUGH, TIGHT CLOSELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTED FROM 9' TO 23' AN 27.5' TO 98.5'. Sol Engineer: Oriber: GREG MARNEY | | | R1 | 3'-15' | | 93% | REC | | | | | | TO 18.5', 58' TO |
| FOLIATION VARIABLE FROM 40 DEGREES TO VERTICAL. OXIDATION ON JOIN TO 32'. R2 15'-25' 91% REC B3% ROD FROM 15' TO 29' A 35' TO 45', 20 TO 30 AND 60-DEGREE JOINIS ACROSS FOLIATION ARE PRE DOMINANT, ROUGH, OXIDIZED, TIGHT. AT 26.5', A 60-DE GREE FOLIATION JOINT, ROUGH, TIGH CLOSELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTE FROM 9' TO 23' AN 27.5' TO 98.5'. Sol Engineer: ONIBER: GREG MARNEY | | | | | | | | | | | | | 90.5' TO 91.5' (BAND); BIOTITE |
| 0XIDATION ON JOIN TO 32'. R2 15'-25' 91% REC | - 20 - | | | | | | | | | | , | | FOLIATION VARIABLE FROM 40 DEGREES TO |
| R2 15'-25' 91% REC | | | | | | — | | | | |] | ļ | THIOL NO HOLLAGIXO |
| FROM 15' TO 29' AL 35' TO 45', 20 TO 30 AND 60-DEGREE JOINIS ACROSS FOLIATION ARE PREDOMINANT, ROUGH, OXIDIZED, TIGHT. AT 26.5', A 60-DE GREE FOLIATION JOINT, ROUGH, TIGH CLOSELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTED FROM 9' TO 23' AN 27.5' TO 98.5'. Sol Engineer: Oriber: GREG MARNEY | | | 82 | 151-251 | | 917 | DEC | | | | • | | TO 32'. |
| 30 AND 60-DEGREE JOINTS ACROSS FOLIATION ARE PRE DOMINANT, ROUGH, OXIDIZED, TIGHT. AT 26.5', A 60-DE GREE FOLIATION JOINT, ROUGH, TIGH CLOSELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTED FROM 9' TO 23' AN 27.5' TO 98.5'. Sol Engineer: Oxilier: GREG MARNEY | | | | | | | | | | | | | FROM 15' TO 29' AN |
| R3 25'-35' 100 % REC JOINT, ROUGH, TIGH CLOSELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTE FROM 9' TO 23' AN 27.5' TO 98.5'. Sof Engineer: Oriller: GREG MARNEY | - 30 - | | | | | | | | | | | | 30 AND 60-DEGREE JOINTS ACROSS FOLIATION ARE PRE- |
| R3 25'-35' 100 % REC JOINT, ROUGH, TIGH 90% RQD CLOSELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTE FROM 9' TO 23' AN 27.5' TO 98.5'. Sol Engineer: GREG MARNEY | | | | | | | | | | | | | DOMINANT, ROUGH, OXIDIZED, TIGHT. AT 26.5' A 60-DF- |
| 90% RQD CLOSELY JOINTED FROM 23' TO 27.5' MODERATELY JOINTE FROM 9' TO 23' AN 27.5' TO 98.5'. Sol Engineer: Orither: GREG MARNEY | 1 | | 00 | 0F1. 0F1 | | | | | | | | | GREE FOLIATION |
| MODERATELY JOINTE FROM 9' TO 23' AN 27.5' TO 98.5'. Soil Engineer: | | | K.3 | 23'-35' | | | | REC | | | | | |
| Soit Engineer: Oritier: GREG MARNEY | | | | | | | | | | | | : | MODERATELY JOINTED FROM 9' TO 23' AND |
| Onuer: WINE TIPINAL I | | | | | | | <u></u> | | l <u>. </u> | 1 | l | <u></u> | 1 27 5' TO 98.5'. |
| Dritting Inspector: Helper: GREG WILLIAMS | | _ | | | | - , - , | | Ori | ller: | GR | EG MAR | RNEY | |
| | Drittin | g Inspector | | | | | | Не | lper: | GR | EG WIL | LIAMS | <u> </u> |

MOSHOLU GOLF COÜRSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | ٤ 0, 3 |
|-----------|---------------|
| LOCATION. | BRONX, OF NY |
| HOLE NO _ | MG-B14-99 |
| | N. 222 125 11 |
| UNE & STA | E:624,605.98 |
| OFFSET | 2,024,000.50 |

| | L.9 | 9018 | | FOR: 1 | METCAL | F&E | ראם(| HAZE | N AN | D SAWY | ER | |
|-------------------------|--------------------------------------|--------|-------------------------|----------------|--------------------|------------|----------------|----------------------|---------|---------------------------------------|--------------------------|--|
| OI PIH | | | 1 fi ca I all casing | SINC OUI | DAIL | | DAIE | , şiari; , finish | | -1-99 -3-99 | | COUND ELEVATION 190.53 |
| CASIN SAMPI DIAMO | G OD HW ER O.D 2" OND BIT SIZE | NQ | 1D | | WEIGHT INSIDE U | | tent little | | | | | Hammer Fall Casing Sampler |
| - 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE (| 2000 2000 20 T | SAMPLE | | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFIL CHANC DEPTH | FIELD IDENTIFICATION |
| 40 | | | | | | | | | | | | AT 30.1', 32', 32.8', 43' AND 46.3', 60-DEGREE FOLIATION JOINTS, |
| | | R4_ | 35' -45' | | 99% | % RQD | REC | | | | | ROUGH, OXIDIZED, TIGHT. AT 31.25', A 20-DE GREE JOINT ACROSS |
| 50 - 10 - | | | | | | | <u>.</u> | | | | | FOLIATION, ROUGH, TIGHT. AT 45.25', A SUB- VERTICAL JOINT ACROSS FOLIATION. |
| | | R5 | 45'-55' | | | REC RQD | | | | | | IRREGULAR, ROUGH, CARBONATE COATING, GPEN. AT 48.7', A 50-DE- |
| 60 -20 | | | | - | | | | | | | | GREE JOINT ACROSS FOLIATION, SMOOTH, TIGHT, EPIDOTE, CARBONATE COATING. FROM 54.5'TO 55.5' |
| | | R6 | 55' -65' | | | REC RQD | | | | 1 | | TWO FOLIATION JOINTS, SMOOTH, TIGHT. AT 58.8', A 40-DE- GREE JOINT ACROSS |
| 70 -30 | | | | | | | | | | | | FOLATION, SMOOTH, TIGHT. FROM 68'TO 68.2', SOFT, FRIABLE, ALONG A 40-DEGREE |
| | | R7 | 65'-75' | | | % ROD | REC | | | | | JOINT ACROSS FOLIATION OPEN. CLOSELY JOINTED FROM 98.5' TO 105' |
| 80 | | | | | | | | | | | | |
| | Engineer: | | | | · | | | llier: _ | | REG MA | RNEY | |
| Drifts | ng inspecto | K; | | | | | Не | olper: . | G | REG WI | LLIA | MS |

WGI Warren George Inc.

SHEEL 3 OF 3 LOCADON BRONX, NY HOLE NO MG-B14-99 LINE & STA N: 323, 436, 44 OFFSEL E: 624, 605, 98

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| DEPTH | | ; | I FI CASING OUT I ALL CASING OUT DATE | DAIE | | DAI DAI | E. SIARI: E. FINISH | | -1-99 -3-99 | | UND ELEVATION 190.53 |
|---|---|--------|--|--------|----------|------------|------------------------|-------|------------------------------|----------------------------|--|
| SAMPL | 3 OD <u>HW</u> ER OD 2 H DND BIT SIZE | | _ 10 | | | | 30 Puer _ | | | | HAMMER FALL CASING SAMPLER |
| - 0 - | CASING BLOWS PER FOOI | SAMPLE | Sample Depths Elev ; Feet | SAMPLE | 0 6 | ON S | PER 6" VMPLER | 18 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPIH | FIELD IDENTIFICATION OF SOIL |
| 80 | | R8 | 75° -85° | | REC | | | | | | AT 92' AND 93.5', TWO FOLIATION JOINTS AT 60 DE- GREES, CHLORITIC AL- |
| 90 10 - | | | | 97% | RQD | | | | | | TERATION, TIGHT. AT 103', A 70-DE- GREE FOLIATION JOINT, SMOOTH, TIGHT. AT 104.5', A SUB- |
| | | R9 | 851-951 | 100 | | REC ROD | | | | | VERTICAL JOINT WITH FOLIATION TREND, IRREGULAR, ROUGH, OPEN, CARBONATE COATING. (2-65) |
| 100 -20 - | | | | | | | | | | | · |
| | | R10 | 95'-105' | 100 | % RQD | REC | | | | 105' | |
| 110 | | | | | | | | | | ı | END OF HOLE 105' |
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| 120 | Y | | | | | | | | | | |
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MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED 543

Warren George Inc.

SUBSURFACE EXPLORATION

SHEET BRONX, OF 3 SHEET __ HOLE NO MISZZ, 903.09
LINE & SIA E: 624, 644.07

| | | 9018 | FC | OR: METCA | all we | - אַעע. | HATE | N & | SAWYER | ŀ | | | |
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| भाष हट भाष हट | | } | 1 11 CASIN | IG OUI DAIE _ | | _ DAI | E. SIART. | _2 | -10-99 -11-99 | I GROL | GROUND ELEVATION 195.56 GROUND WATER ELEVATION 1187.14 | | |
| - Asink Sampli Saalo | ER OD. 211 DND BII SZE | NQ | | WEICH INSIDE | IT OF HA LENGIH | MMER _ OF SAM | | 0-14 24 | | 186 | 21539 HAMMER FALL CASING 24" SAMPLER ³⁰ " | | |
| - J - | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEP ELEV - FEE | | 0 6 | ON \$4 | PER 6" MPLER | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL | | |
| i | | | 0'-2' | | 3 | 2 | 2 | 2 | | 0'- | TOPSOIL (4"). RUST BROWN SILTY SAND, ORGANIC MATTER FROM | | |
| | | 553 | 2'-4' 4'-6' | 18 | 3 7 | 12 | 12 | 4 | | 4' | 0' TO 2' (11-65). LOOSE FROM 2'TO 4'. (SM) (7-65) | | |
| | | | 6'-6.7' | 6" | | 100 | /1" | | | | RUSTY BROWN SILTY SAND, TRACE GRAVEL TO 9', WITH ROCK | | |
| - 10 - | | | 8'-10' | 12 | 12 | 38 | 100 | /2" | WASH | 11' | FRAGMENTS BELOW 9'. MEDIUM DENSE TO DENSE (SM) (6-65) | | |
| | | | | | | | | | | | GNEISS. MEDIUM GRAY, MGDERATELY HARD TO HARD. QUARTZITIC BANDS, SLIGHTLY WEATHERED | | |
| - 20 - | | R1 | 11'-21' | 997 | REC | | | | | | FROM 11' TO 19'. OXIDATION ON JOINTS TO 17.5'. FOLIATION AT 70 DEGREES TO SUBVERTICAL FROM | | |
| 1 | | | | | | | | | | | 11'TO 21' AND BELOM 69'; AT 45 DEGREES FROM 33' TO 40'; INDISTINCT FROM 21' TO 33', 40' TO 69'. | | |
| -30 - | | R2 | 21'-31' | | REC RQD | | | | | | CLOSE TO MODERATEL' CLOSE JOINT SPACING FROM 11' TO 19'. SOME OXIDATION ON | | |
| \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ | | | | | | | | | | | FOLIATION AND SUB- HORIZONTAL JOINTS. SHEARING ALONG A SUBHORIZONTAL JOIN | | |
| -40 - | | | | | | | | | | | FROM 12.5' TO 13' WITH CHLORITE AND HEMATITE STAINING | | |
| Soil E | ingineer: _ | | | · | | Dril | ller: | GL | JS SUR | t | | | |
| Oriting | Inspector. | | | | | He | lper: _ | S 1 | EVEN L | LEDDE | KE | | |

WGI Warren George Inc.

SUBSURFACE EXPLORATION

L.99018

FOR: METCALF&EDDY-HAZEN & SAWYER

| SHEET | OF - |
|-------------|--------------|
| LOCATION_ | BRUNX, OF NY |
| HOLE NO _ | MG-815-99 |
| LINE & STA. | N:322,903.09 |
| OFFSET | |

| CASING D PROPERTY TO P | | | | I H CASING OUI DATE | | | 1 | | | | GF | ROUNE | D ELEVATION 195.56 D WATER ELEVATION 187.14 2.115[99] |
|--|-------------------------|--|--------|--|--------|------------------|------------------|--------------|------------|----------------|--------|-------|---|
| ## Page | CASIN SAMPI DIAMI | KG O.D HW LER O.D 27T OND BIT SIZE | NQ | _ 10 | WEIGHT | OF HAI LENGIH | MMER _ OF SAM | 30 PLER _ | 0-14 24 | 0 | | CAS | HAMMER FALL |
| ## Page | | BLOWS | SAMPLE | (00) State (00) - 00 - 00 - 00 - 00 - 00 - 00 - 00 | COVERY | | ON SA | MPLER | | OR CONSIST. | CHANG | GE | |
| 40 937 RQU SURFACE. FROM 13' TO 14', A 75-DEGRE JUSTACES FROM 13' TO 14', A 75-DEGRE JUSTACES FOLIATION, DXIDIZED. (2-65) 50 R4 41'-51' 99% REC MIDE JUST SPACING BELOW 19'. 60 P30 R5 51'-61' 99% REC P30 R | - 0 - | | | 76 • 44 • | | | | 12 - 18 | 18 - 24 | MOISTURE | DEPTH | Н | |
| 50 | 40 | | , K3 | 51'-41' | | | | | | | | | SURFACE. FROM 13' TO 14', A 75-DEGRE JOINT ACROSS FOLIATION. |
| ### ### ############################## | | | | | | | | | | | | | |
| R4 41'-51' 997 REC | | | | | | | | | | | | | WIDE JOINT SPACING |
| 20 R5 51'-61' 99% REC 98% RQD 70 86 61'-71' 99% REC 98% RQD 98 | | | R4 | 41'-51' | | | | | | | | | IN GENERAL, THE ROCK IS VERY GOOD |
| 20 R5 51'-61' 99% REC 98% RQD 70 86 61'-71' 99% REC 98% RQD 98 | | | | | | | | | | | ē | | |
| R5 51'-61' 99% REC 98% RQD 98% | | | | | | | | | | | | | |
| R6 61'-71' 99% REC 98% RQI % RQI 98% | 20 | | R5 | 51'-61' | | | | | | | | | |
| R6 61'-71' 99% REC 98% RQI % RQI 98% | | | | | | | | | | | | | |
| R6 61'-71' 99% REC | 70 | | | | + | | | | | } | | | |
| Solf Engineer: | -30 | | RS | 61'-71' | | | | | | 1 | | | |
| Soll Engineer: | | | | | | | | | | 1 | | | |
| Soll Engineer: | | | | | | | | | | - | | | |
| Solf Engineer: | | | | | | | | | - | } | | | |
| STEVEN LIEDDEKE | | | | . | | | L | <u>l</u> | iGI | JS SUR | 1 I | | |
| Helper: Helper: | | ng Inspector | | | | · | and the same of | | | | DEK | Œ | |

SHEET _

| VAN | HOLU GI CORTLI TRACT I | ANDT | PARK | | | W(| | 1,0 | LOCATION BRONX, NY HOLE NO NE 322, 903.09 LINE & SIA E: 624, 644.07 | | | |
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| | L.9 | 9018 | | FOR: | METCA | LF&E | DDY- | HAZE | N & | SAWYER | 1 | FFSET |
| DEPIH | | • | I H CA | OUI DAIL | | OF HAI | DAI | E. FINISH | | -10-99 -11-99 | GRO | und Elevation 195.56 und water Elevation 187.14 2115.99 |
| SAMPL DIAMO | ER O.D 211 DND 811 SIZE | NQ | _ 1.D | | INSIDE | ENGIH (| OF SAM | PLER _ | 24 | | _ LRS. | CASING 24" SAMPLE 30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE (| DEPINS | SAMPLE | | ON S | PER 6' | · | DENSITY OR CONSIST. | PROFILE CHANGE DEPIH | FIELD IDENTIFICATION OF SOIL |
| - u - | | | 742 644 | | | | | 12 - 18 | 18 - 24 | MOISTURE | | |
| 80 | | ~/ | 71'-81' | - | 99% | | | <u> </u> | | <i>i</i> → <i>i</i> −−− | 81' | |
| | | | | | 36% | RQD | | | | | | END OF HOLE 81 |
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| | | | | | | | | | t | 1 | | |
| [| | - | <u> </u> | | | | | | | 1 | | |
| ŀ | | 1 | | | + | | ł | | - | - | | |
| 12 | | | | | | <u> </u> | <u> </u> | 1 | 1 | 1 | | |
| -40 | | J | | | | | | | 1 | 1 | | |
| Soil | Engineer: | | | | | <u>.</u> | 0 | riller: _ | G | US SUR | :I | |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEE! BRUNX, OF NY
LOCATION MG-B15-99
HOLE NO N: 323, 151.70
LINE & STA E: 624, 674.92

| | L. 91 | 9018 | | FOR: | METCAL | _F&EI | DDY- | HAZE | N AN | YWA2 C | ER | |
|--------------------------|-----------------------------|--------------|--------------|---|----------------|-------------------|----------------|--------------|--|--------------------------------------|--------------------------|---|
| | | | I FI CA | OUT DAIL. | | | DANG | , rawan | 2 | -9-99 -8-99 | _ G | ROUND ELEVATION 194.87 ROUND WATER ELEVATION 183.19 |
| CASING SAMPU DIAMO | ER OD ZTEND BIT SZE | NQ | _ I.D | | WEIGHT | of Han Engih (| OMER _ | 30 PUER | 0-14 24 | | _ LBS. IN. | HAMMER FALL |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE 1 | | SAMPLE | 0.0 | BLOWS ON SA | | 18 · 24 | DENSITY OR CONSIST MOISTURE | PROFII CHANC DEPTI | GE FIELD IDENTIFICATION |
| -0- | | | | | | | | | | | Qr- | TUPSUIL (6"). DARK |
| | | _SS1 | 01-21 | | 12" | 2_ | 3 | 3 | 4 | | 2' | BROWN SILTY SAND, ORGANIC MATTER. |
| | | <u> 592</u> | 21-41 | | 14" | 4 | 7 | 8 | 8 | | l | LOOSE. (SM) (11-65) |
| | | SSS | 4'-6' | | 10" | 9 | 11 | 27 | 100 | | | RUSTY BROWN SILTY SAND, TRACE GRAVEL |
| | | CCA | 6'-8' | | 10" | | 17 | 24 | /4" | | ۱., | TO 4', SOME GRAVEL |
| | | | 8'-8.3' | | 3" | 100 | | 21 | 24 | ĺ | 8' | FROM 4' TO 8'. MEDIUM DENSE TO |
| 10 - | | | | - | | | | | | 1 | | DENSE. (SM) (6-65) |
| | | | | - 3 | - | - - | | | - | ļ | 9.5 | 5' YELLOW BROWN SILTY F-M SAND WITH MICE |
| | | | | | 1- | | | | - | | | ROCK FRAGMENTS. |
| | | | | | | | | | | | | VERY DENSE. |
| | | | | | | | | | _ | į | 1 | POSSIBLE SAPROLITI |
| | | | *** | · -··- | + | | | | - | 1 | | ROCK).(SM AND GM) |
| | | | | | | | | | | 1 | _ | (6-65/5-65) |
| _20 - | <u> </u> | R1 | 10'-20' | | 90% | REC | | ┼ | - | - | | |
| | | | | | 50% | | | | | 1 | | İ |
| ļ | | | | | + | - | | | | - | | GNEISS, MEDIUM GRA |
| 1 | | | | | 1 | | _ | | | ┪ . | | MODERATELY HARD TO |
| l | | | | | | | | | | 1 | ļ | HARD. FOLIATION AT |
| 1 | | - | | | | | | | | 4 | | 70 DEGREES TO SUB- |
| | | | | ;;;; <u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u> | | | - | + | +- | - | | VERTICAL. |
| | | | | | - | | | | |] | | 1 |
| -30 | | R2 | 20' -30' | <u> </u> | 987 | REC | 1- | + | | - | | MODERATE |
| 1 | | + | | - | 1 36/ | KPI | ┼─ | | + | -{ | 1 | WEATHERED TO 15.5' |
| 1 | | | | | | | | | | 1 | ł | WITH SOME OXIDATIO |
| | | | + | | 4 | | <u> </u> | | | 1 | | ON FOLIATION AND |
| | | | | | - | | ┼— | + - | + | - | | SUBHORIZONTAL JOINTS. PITTED COF |
| 1 | | | | | | | | | 1 | 1 | | SURFACE FROM 11' |
| 1 | —— | | | | | | | | |] | 1 | 25'. (3-65) |
| | | R4 | 30*-40 | | | REC | | + | + | - | İ | ŀ |
| 40 | | | | | | A RQ | <u> </u> | ــــــ | | .1 | | |
| Soil | Engineer: | | | | | | D | riller: _ | R | EYNOLI | S BF | RIDGPAL |
| Drittin | ng Inspecto | c | | | | | н | elper: . | A | LVRO L | ONDO | ON |
| | | | | | | | | - 88 | | 2.5 10 3 | | |

JUB TUCKNOW

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 2 OF 2 LOCATION BRONX, NY HOLE NO MG-B15-99 UNE & SIA N: 323, 151.70 OFFSET E: 624, 674.92

| | Ĺ.9 | 9018 | | FOR: | METCAI | LF&E | DDY- | HAZE | N AN | — ID SAWY | ER | Orrsc) |
|---------------------------|------------------------------------|--------------|-----------------|-------------|--------------------|-----------------|--------------------|--|--------------|------------------------------|---------------|---|
| DI PIH DEPIH | | I | L FI CA | OUI DAIE | DAIF | | _ DAI | E. SIARI: E. FINISH | | 2-8-99 2-9-99 | G | ROUND ELEVATION 194.87 ROUND WATER ELEVATION 183.19 210 197 |
| C ASINI SAMPI DIAMO | G OD HW ER OU 2" DND BIT SZE | NQ | _ 10 | | WEIGHI INSIDE L | of Hai Engih | MIMER _ OF SAIN | 30 | 0-14 24 | 0 | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLER ³⁰ " |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE (| | SAMPLE | 0.4 | ON S | PER 6 | | DENSITY OR CONSIST. MOISTURE | PROFI CHAN | GE FELD IDENTIFICATION |
| -0- | | | | | | | - | 12 - 10 | 10 - 24 | | | |
| 40 | | | | | | | | | | | | |
| | | | | | | | | ļ | | , | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 50 -10 - | | R4 | 40' ~50' | | 997 | REC | | - | _ | | | |
| | | | - | | | RQI | | | 12 100 |] | | 5507 5444 |
| | | | | | | | | | | | | ROCK QUALITY IMPROVES BELOW |
| | | | | | | | | <u> </u> | - | | | 15.5'. MODERATELY CLOSE TO WIDE JOIN |
| | | | | | - | | | | | | | SPACING. A FEW SUB |
| - | | | | | | | | | | | | HORIZONTAL JOINTS ACROSS FOLIATION. |
| 60 -20 - | | R5 | 50'- <u>60'</u> | | 99% | REC | | | | | | GOOD ROCK. |
| | | | | | 97% | ROI | | | | 1 | | |
| | | | | | | | | | | 1 | | |
| | | | | | | : | | | | • | | |
| ĺ | | | | | _ | | | ┼ | | } | | |
| 70 | | | | | - | | | | | 1 | | |
| -30 · | | R6 | 50'-70' | | | REC | | 1 | | | | |
| | | | | | 97% | RQI | | <u> </u> | - | 1 | | |
| | | | ļ | - | | | | - | |] | | ļ |
| | | ļ | | | | | | | | 1. | | Ì |
| ļ | | | ļ. <u></u> | | | | | | | 1 | | ř |
| Bo | | R7 | 70′-80′ | | 90% | REC | | | |] | | |
| -40 | | 1 | 10 | | | ROI | | | <u> </u> | 1 | Bo | END OF HOLE BO' |
| Soil | Engineer: _ | treat . | | | | | r. | riller: | RI | EYNOLD: | s Br | IDGPAL |
| | _ | | - | | | | | - International International | | | | |
| CAME | og inspector | | | | | | — н | elper: _ | A | LVRO L | חמאח | NA |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 1 OF 3

LOCATION BRONX, NY
HOLE NO MG-B17-99
UNE & STA E: 624, 708.49

| | L.9 | 9018 | | FOR: | METCAL | F&EI | DY- | HAZE | N AN | — D SAWY | ER | | |
|------------------|---|------------------|------------------|------------------------|---------------------|------------|--|---------------------|------------|---------------------------------------|-----------------------|--------|--|
| DI PIN DI PIN | | {1 | L FI CA | ASING OUI OUI DAIE. | DAIE | | DATE | . SIARI . FINISH | | -25-99 -2-99 | _ G | ROUND | ELEVATION 192.33 WATER ELEVATION 185.54 3124.99 |
| SAMP | G OD <u>HW</u> ER O.D. <u>2"</u> DND BIT SIZE | | _ ID | | WEIGHT INSIDE LI | OF HAM | IMER _ OF SAMI | | 0-14 24 | | _ LB\$. IN. | CASIN | HAMMER FALL IG 24" SAMPLER30" |
| | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE ELEV / | | SAMPLE | | BLOWS | | 19 24 | DENSITY OR CONSIST. MOISTURE | PROFI CHAN DEPI | GE | FIELD IDENTIFICATION OF SOIL |
| - v - | | | 0'-2' 2'- | | 18" | | 10 | 27 /5" | 54 | | 0'· 2' | F | DARK BROWN SILTY F-M SAND AND DARK BILTY SAND WITH |
| į | | | | | | | <u>. </u> | | | | 4' | 2 1 | BILT, ORGANIC MATTER.(SM) (11-65 DARK GRAY SILTY |
| | | | | | | | | | | | | 1 | F-C SAND, MICA, COBBLES, ROCK FRAGMENTS. VERY |
| - 10 • | | | | | | - | | | | | - | | DENSE. POSSIBLE SAPROLITIC SOIL. (SM AND GM)(6-65) |
| | | _R1 | 4'-14' | | | REC ROD | | | | | | | GNEISS. MEDIUM GRAY, MODERATELY HARD TO HARD, |
| -20 | | | | | | | | | | | | | QUARTZITIC FROM 42 TO 52'. FAINTLY WEATHERED TO UN- WEATHERED. |
| | | | | | | | | | | | | . 1 | FOLIATION VARIES FROM 75 TO 85 DEGREES FROM 4' |
| | | R2 | 14'-24 | | 77% | % RQD | REC | | | d . □ | | Ì | TO 10'; 50 DEGREES FROM 10' TO 14'; 30 TO 60 DEGREES FROM 14' TO 19'; |
| -30 | | | | - | | | | | | | | | 40 DEGREES FROM 19 TO 24'; 30 TO 70 DEGREES FROM 26'TC |
| | | - | 24'-34 | | - | - | | | | | | - 1 | 42'; 50 TO 80 DEGREES FROM 52' 1 70.5'; |
| | | 125 | 2434 | | | REC | | - | - | | | | INDISTINCT FOLIATION FROM 42' TO 52' AND BELOW 70.5'. |
| - 40 | | | | | | | | | | | | | OXIDATION ON JOIN' |
| 1 | | | | | | | | riller: _ | | EYNOL | | | PAL |
| Drill | ing Inspecto | X: | | | | | H | elper: . | | LVRO L | עמט | N | |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 2 3
LOCATION BRONX, OF NY
HOLE NO MG-B17-99
LINE & STA E: 624, 708, 49

| · | L.9 | 9018 | | FOR: | METCAL | _F&EI | DY- | HAZE | N AN | ER | OFFSET | |
|------------------|--------------------------------------|------------------|----------|--------------|--------------------|-------------------|-------------------|----------------------|------------|---------------------------|--------------------------|--|
| 14 PIH 24 PIH | | 6 : b: | I II CA | SING OUI | DAIE | | DATE | . SIART: . FINISH | 3 | -25-99 -2-99 | | ROUND ELEVATION 192.33 ROUND WATER ELEVATION 185.54 |
| AMPL | 3 00 HW ER OD. 2" OND BIT SIZE | | _ 10 | | MEICHI INSIDE L | OF HAM ENGIH (| IMER _ DF SAME | | 0-14 24 | 0 | _ L8S. IN. | HAMMER FALL CASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE (| | SAMPLE | | BŁOWS ON SA | MPLER | | DENSITY OR CONSIST. | PROFIL CHANG DEPTI | GE FELD IDENTIFICATION |
| · o - | | | | | ~ | 0.0 | o ·12 | 12 - 18 | 18 - 24 | MOISTURE | OEF. | |
| 40 | | | | | | | | | | | | MODERATELY CLOSE TO |
| | | R4 | 34'-44' | | 1 | REC | | | | | | CLOSE JOINT SPACING FROM 4' TO 19' WITH SEVERAL OPEN |
| | | | | | | | | | | | | JOINTS, OXIDIZED, MOSTLY ROUGH. CLOSS TO WIDE JOINT |
| 50 | | - | | | - | | | | |] | ı | SPACING BELOW 19'. |
| - 10 - | | | | | | | | | | | | FROM 10' TO 12.25', IRREGULAR FOLIATION |
| | | R5 | 44' -54' | | 100 | % RQD | REC | | | - | | JOINT AT 75 DEGREES TO VERTICAL TO 50 DEGREES, OXIDIZED, |
| | | | | | | | | | | | | OPEN, ROUGH. AT 15.3', A 60-DEGREE JOINT ACROSS |
| 60 | | | | | | | | | | 1 | i | FOLIATION, OXIDIZED |
| 20 - | | | - | | | 25175 | - | | | 1 | | ALTERED IN CHLORITY AND COATED WITH CARBONATE, SMOGTH |
| | | R6 | 54' -64 | | 997 | REC | | | | | | (2-65) ROCK CLASS FROM 4' TO 19'. |
| | | | | | | | | | | | | AT 19' TD 20.1', TWO FOLIATION JOINTS AT 40 DE- |
| 70 | | - - | 4 | | | | | | | 1 | | GREES, SMOOTH, |
| -30 | | | | | | | | | | - | | TIGHT. AT 24.2', 24.9', 40 AND 60- DEGREE JOINTS, |
| | | P7 | 64'-74 | , | 100 | 7 | REC | | | | 74 | SMOOTH, TIGHT, WIT |
| | | | | | | RQI | | | | | ' | AND CARBONATE |
| 80 | | | | | | | | | | - | | AT 39.7', A 20- DEGREE JOINT ACROS FOLIATION, SMOOTH, |
| -40 | 1 | | 1 | | | | | 1 | | 1 | <u>l</u> | TIGHT, WITH |
| Soil | Engineer: | | | | | | D | riller: _ | R | EYNOLD | S BR | RIDGPAL |
| Onli | ng Inspecto | x: | | | | | н | elper: _ | Α | LVRO L | ONDC | IN |

JOB FOCUTION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

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SHEET 3 OF 3
LOCATION BRONX, NY
HOLE NO MG-B17-99
LINE & SIA N: 323, 420.47
OFFSET E: 624, 708.49

| | L.9 | 9018 | | FOR: N | 1ETCAI | _F&EI |)DY | HAZE | N AN | D SAWY | ER | |
|----------------|--|------------------|---------------------|----------------------|--------------------|-------------------|--------|---------------|------------|------------------------------|---------------------------|--|
| DEPIH DEPIH | | H | . ALL CASING | SING QUI OUI DAIE | DATE | | DAI | . SIARI: | _2 | -25-99 -2-99 | GR | DUND ELEVATION 192.33 DUND WATER ELEVATION 185.54 5 24 39 |
| SAMPL | S O D <u>HW</u> ER O.D. <u>2"</u> IND BII SIZE | | - ID | | WEIGH! INSIDE I | OF HAM ENGIH C | IMER _ | | 0-14 24 | | _ (BS IN. | HAMMER FALL CASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE I ELEV. / | | SAMPLE | | ON SA | PER 6" WIPLER | 18 - 24 | DENSITY OR CONSIST NICHSTURE | PROFILI CHANG DEPIH | FIELD IDENTIFICATION |
| - 10 - - 20 | | | | | | | | | | | | CHLORITE AND EPIDOTE ALTERATION AT 43', A 10-DEGRE JOINT, SMOOTH, OPEN AT 51.3', A 50- DEGREE JOINT, SMOOTH, TIGHT, WIT CARBONATE COATING. AT 53', A 10-DEGRE JOINT, SMOOTH, TIGHT, WITH CARBONATE COATING. AT 67', A 50-DEGRE FOLIATION JOINT, SMOOTH, TIGHT. ROCK BELOW 19' IS GENERALLY GOOD, MASSIVE. (1-65) END OF HOLE 74' ORIENTED CORE FROM 15' TO 74'. WATER PRESSURE TESTS IN ROCK FROM 5' TO 74'. PIEZOMETER IN- STALLED AT 68.5'. |
| | Engineer: | | | | | | | Oriller: | F | EYNOLI | OS BR | IDGPAL |
| Dyl | ing inspect | or | | | | | • | leiper: | f | LVRO I | ONDO | N |

1 .

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURPACE EXPLORATION

| _ | L.9 | 901B | | FOR: M | IETCAL | F&ED | H-YQ | IAZE! | N AN | D SAWY | ER | |
|--------|-----------------------------------|-------------|--|--------------|---------------------|--------|----------------|-------------------|--|---------------------------------------|-----------------------|---|
| | | | 11 CA | | | | | START: FINISH: | | -26-99 -2-39 | G | ROUND ELEVATION 194.72 ROUND WATER ELEVATION 185.86 |
| AMPL | CD HW ER O.D 2" OND BU SIZE | | _ ID | | WEIGHI INSIDE (J | OF HAM | MER F SAMP | 30: | 0-14 24 | 0 | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE (| | SAMPLE | | BLOWS ON SA | MPLER | 10 24 | DENSITY OR CONSIST. MOISTURE | PROFI CHAN DEPT | GE FIELD IDENTIFICATION |
| - o - | | | | | ~ | 0.0 | 0 -12 | 12 - 10 | 18 - 24 | | 01- | - DARK BROWN SILTY |
| | | SS1 | 0'-2' | | 12" | 3 | 3 | 4_ | 4 | | 3' | FINE SAND, ORGANIC MATTER. LOOSE. |
| | | SS2 | 21-41 | | 9" | 4 | 5 | 6 | 6 | 1 | | (SM) (11-65) |
| | | SS3 | 4'-6' | | 7" | 3 | 3 | 4 | 9 | 1 | 6' | BROWN TO YELLOW BROWN SILTY F-M SAND. MEDIUM DENSE |
| | | <u> 554</u> | 6'-8' | | 3" | 15 | 19 | 23 | 35 | 1 | | (SM) (7-65) |
| - 10 - | | _595 | B'-10' | | 5" | 9 | 11 | 27 | 31 | 4 - | | BROWN SILTY F-M SAND WITH SOME |
| | | | | | | | | | | 1 | | GRAVEL. DENSE. (SM) (6-65) |
| | <u> </u> | - | | | | | | | ļ — | - | ١, ـ | |
| | | | | | | | | | 1 | 1 | 15 | GNEISS. MEDIUM |
| | | | | | | | | | | - | | GRAY, HARD. QUARTZITIC BANDS |
| İ | - | P1 | 15'-20' | , | 957 | REC | | - | | - | 1 | FROM 69.5' TO 75.5'. SLIGHTLY |
| -20 | - | | | | | RQD | | - | | 1 | | WEATHERED TO UN- |
| | | - | | | | | | | 1_ | 1. | | FOLIATION AT 70- DEGREE TO SUB- |
| | | 1 | | | 1 | | | | | 1 | | VERTICAL FROM 15' |
| | | - | | | | | | | 1 | 4 | İ | AT 30 TO 50 DEGREE FROM 40' TO 70'. |
| -30 | | R2 | 207-30 | , | 100 | 7. | REC | ļ | | 1 | | DXIDATION ON JOINT |
| F.30 | | | | | | ROD | | | | 4 | | TO 26.3'. CLOSE TO MODERATELY CLOSE |
| 1 | | | | | | | | | 1 | | 1 | JOINT SPACING. |
| | | | | | | 1 | ļ | 1 | 4 | _ | 1 | NUMEROUS SUB- |
| | | | | | | | | | 1 | | 1 | HORIZONTAL JOINTS ACROSS FOLIATON, |
| | | 4- | - | | | 1 | | | | 1 | | MOSTLY ROUGH. BELO 40', 40 TO 80 DE- |
| | | R3 | 30'-40 | , | | REC | | | 1 | _ | | GREE JOINTS (FOLIA |
| -40 | | | | | 1 83 | Z RQI | 4 | Щ- | Ш | | | TION) AND ACROSS |
| Soil | Engineer: | | | | | | 0 | niler: | | JAKE H | ARRI | S |
| Drit | ing inspect | or: | | | | | | elper: | . 1 | DAVE H | ARRI | S |
| | | - | | 451 17 | | | | J. (2001) | 0.000 | mode of | | |

TOUR LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

| | L. 9 | 9018 | | FOR: | METCAL | F&ED | DY-H | IAZEN | ANI | D SAWY | ER | |
|-----------------------|--------------------------------------|--------|----------|--------------|--|----------|---------|------------------|---------|---------------------------------------|----------------------------|--|
|) | | | FI CA | | | | | SIARI; FINISH | | -26- 9 9 -2-99 | GROUN | D ELEVATION 194.72 D WATER ELEVATION 185.86 3124199 |
| AMPL | S OO HW ER O.D 2" IND BIT SIZE | | _ I.D | - CONTROL OF | WEICHI OF HAMMER 300-140 INSIDE LENGIH OF SAMPLER 24 | | | | | | LBS. IN. CA | HAMMER FALL ASING 24" SAMPLEF30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE I | | SAMPLE | ه ه | BLOWS I | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| - ข 40 | | | | | | | | | | | | FOLIATION) PRE- DOMINATE ABOVE 40' FROM 15' TO 18', WEATHERED SUB- VERTICAL FOLIATION JOINTS, SLIGHTLY OXIDIZED, ROUGH, |
| 50 - 10 - | | R4 | 407-507 | | 98% | | | | | | - | OPEN. AT 25.6', A 50- DEGREE JOINT WITH FOLIATION TREND, SMOOTH, OPEN, ALTERATION IN CHLORIDE, CARBONAT COATING. AT 42.1', |
| 60 -20 | | R5 | 50'-60' | | 100 85% | % RQD | REC | | | | | 45.7', 49.6', 59.9'(OPEN) 60.1', 40 TO SO-DEGREE FOLIATION JOINTS, SMOOTH, TIGHT ALTERATION IN CHLORITE. AT 68.3' A 50-DEGREE FOLIATION JOINT, |
| 70 -30 | | R6. | 60'-70 | | | REC | | | | | | SMOOTH, OPEN. FROM 72' TO 73', SUBVERTICAL JOINT ACROSS FOLIATION, TIGHT, ROUGH. FROM 78.75' TO 79.25', A 70- |
| 80 | | R7 | 70'-80 | 7 | 100 | | REC | | | | 801 | DEGREE SMOOTH FOLIATION JOINT, ALTERATION IN CHLORITE. FAIR ROCK FROM 15 |
| | Engineer: | ж | | | <u>.</u> | l Roi | D | aller: _ | | AKE HA | | 1 TO 26.5' AND |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET BRONX, OF NY LOCATION MG-B18-99 HOLE NO N:322,893.84 E:624,742.15

L.99018

COR. METCALF&EDDY-HAZEN AND SAWYER

| | | | FOR: | | | , , , | melli | , 1111 | | | | |
|--------|--------------------------------------|-------------------|---|--------|--|----------|----------------------|---------|---------------------------|------------------|---|--|
| | | | L. H. CASING OUI ALL CASING OUI DATE | DAIE | | DATE | . SIARI . FINISH: | | -26-99 -2 -99 | GR | XOUND ELEVATION 194.72 XOUND WATER ELEVATION 185.86 3124199 | |
| AMPL | G CO HW ER O.D 2" OND BIT SIZE | | _10 | WEIGHT | WEIGHT OF HAMMER 300-146 INSIDE LENGTH OF SAMPLER 24 | | | | | _ LBS IN. | HAMMER FALL | |
| | CASING BLOWS | SAMPLE NUMBER | SAMPLE DEPTHS ELEV . FEET | SAMPLE | | | PER 6" | | DENSITY OR CONSIST. | PROFILE CHANG | FELD IDENTIFICATION | |
| ა – | | | | 39 95 | 0.0 | 6 12 | 12 - 18 | 18 - 24 | MOISTURE | DEPTH | <u> </u> | |
| | | | | | | | | | | | 42' TO 50'. (2-65) | |
| | | | | | | - | | | ; | | ROCK QUALITY IMPROVES BELOW 501 (1-65) | |
| | | | | | | | | | | | END OF HOLE 80' | |
| - 10 - | | | | _ | | | | | | | ORIENTED CORE FROM | |
| | | | | + | | | | | † - - | | WATER PRESSURE TESTS IN ROCK FROM | |
| | | | | | | | | | 1 | | 20' TO 80'. PIEZOMETER | |
| | | - | | - | | - | | | , | | INSTALLED AT 12'. | |
| - 20 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | - | | - | | | | | |
| | | | | | | | | | | | | |
| - 30 | | | | | | | | | | | | |
| | - | - | | | +- | <u> </u> | 1 | | - | | | |
| | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| | Engineer: | , 1 1 | | | | (| Oritler: | ز | IAKE H | ARRIS | 5 | |
| Drill | ling Inspect | :or: | | | | 1 | lelper: | | AVE H | ARRIS | S | |
| | | | | | | | | | | | | |

DUBTULATION:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Drilling Inspector:

Warren George Inc.

SHEEL BRONX, OF NY
LOCATION MG-B19-99
HOLE NO N: 323, 040.23 E: 624, 760.57

SHEET

SUBSURFACE EXPLORATION

FOR: METCALF&EDDY-HAZEN AND SAWYER L.99018 GROUND ELEVATION 195.57 2-12-99 _ DAIE, SIARI: _ DAIE. FINISH 2-15-99 GROUND WATER ELEVATION 184.17
217199 DEPTH _____ ET ALL CASING OUT DATE HAMMER FALL CASING OD HW 300-140 LID . WEIGHT OF HAMMER LBS SAMPLER OD 2" CASING 24" SAMPLET 30" INSIDE LENGTH OF SAMPLER 24 _ 10. _ IN. DIAMOND BIT SIZE NQ SAMPLE RECOVERY CASING BLOWS PER 6" DENSITY PROFILE SAMPLE NUMBER SAMPLE DEPTHS FIELD IDENTIFICATION OR **BLOWS** ON SAMPLER CHANGE ELEV / FEET CONSIST. OF SOIL PER FOOT DEPTH MOISTURE 5 -12 12 - 18 18 - 24 0 - 6 0 -0'-TOPSOIL (3"). DARK SS10'-2' 12' 2" 2 3 BROWN SILTY SAND. ORGANIC MATTER. SS22'-4' 14' 5 LOOSE.(SM) (11-65) 4 4 RUSTY BROWN SILTY SS34'-6' SAND, TRACE TO SOM 8" 58 31 29 24 GRAVEL, TRACE COBBLES. LOOSE TO SS46'-8' 6" 21 24 27 30 8.5 VERY DENSE. (SM) (6-65) - 10 GNEISS. MEDIUM GRAY, GENERALLY WEATHERED. FOLIATION AT 60 DEGREES TO SUB-R1 8.5'-18.5' 57% REC VERTICAL. OXIDATIO 27% RQD ON JOINTS TO 18.5' - 20 FRACTURED AND DXIDIZED FROM 8.5' TO 13.1'. FROM 12.7' TO 13.1', 75-DEGREE FOLIATIO JOINT, SMOOTH, TIGHT, OXIDIZED. R2 18.5'-28' 100 % REC (4-65/3-65) 86% RQD - 30 -R3 28'-38' 97% REC 78% RQD 40 GUS SURI Soil Engineer: Oriller:

- Helper -

STEVEN LUEDDEKE

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 2 OF 3
LOCATION BRONX, NY
HOLE NO MG-B19-99
LINE & SIA E: 624, 760.57

| | L.9 | 3 018 | | FOR: M | ETCAL | F&ED | DY-H | IAZEI | N AN | D SAWY | ER | |
|---------------------|-----------------------------|--|--------------------|-------------------------|--------|------------|-----------------|-------------------|--|---------------------------------------|----------------------------|---|
| 4 PIH 8 PIH | | FI | FI CA | ISING OUI I OUI DAIE | DAIE | | DAIE. | START; FINISH: | | -12-99 -15-99 | _ GRO | UND ELEVATION 195.57 UND WATER ELEVATION 184.17 217199 |
| AMPL | R OD 2" NO BIT SIZE | WEIGHT OF HAMMER 300-140 INSIDE LENGTH OF SAMPLER 24 | | | | | | , LBS. IN. (| HAMMER FALL CASING 24" SAMPLER ³⁰ " | | | |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE ELEV + | | SAMPLE | | BLOWS ON SAI | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIFLD IDENTIFICATION |
| -0 - - 40 | | | | | | | | | | | | ROCK QUALITY IMPROVES BELOW 18.5'. HARD MODERATELY TO |
| 50 - 10 - | | R4 38' -48 | | | | REC ROD | | | | 1 | | SLIGHTLY WEATHERED CLOSE TO MODERATEL JOINT SPACING FROM 18.5' TO 48', MODERATELY CLOSE |
| | | R5 | 48' -55' | | 100 | % RQI | REC | | | | | SPACING FROM 48' TO 63.3' AND BELOW 65.5'; CLOSE SPACING FROM 63.3' TO 65.5'. |
| 60 20 | | | | | | 1,621 | | | | | | FROM 21.3' TO 22', A 75-DEGREE FOLIATION JOINT, ROUGH, TIGHT. FROM 28.5' TO 29', |
| | | R6 | 55'-63 | .5' | 977 | % RQI | REC | | | - | | A SUBVERTICAL FOLIATION JOINT, ROUGH, IRREGULAR, BIOTITE. FROM 31.2' TO 32', A SUBVERTICAL JOIN |
| 70 -30 | | | | | | | | | | | | WITH FOLIATION TREND, ROUGH, TIGHT, CARBONATE COATING. FROM 46.9' TO 48', |
| | | R7 | 63.5'- | 73.5' | | RE(| | | | | | A SUBVERTICAL JOINT, ROUGH, IRREGULAR, CHLORIT ALTERATION. |
| 80 | | | | | | | | | | | | FROM 52' TO 52.6', TWO FOLIATION JOINTS, CURVED, SMOOTH, CHLORITE |
| | Engineer: | · | | | | | | tiller: . | | SUS SUE | | DEKE |
| Dril | ing inspect | or; | | | | | <u> </u> | lelper: | | PICACIA | <u> </u> | Manix - |

JOB LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

. SUBSURFACE EXPLORATION

| L. | 99018 | | FOR: N | 1ETCAL | F&EI | ו–ץםכ | AZE | N AN | D SAWY | ER | · |
|----------------------------|---------|----------------|----------|--------|------------|----------------|---------------------|------------|------------------------------|----------------------------|---|
| PD1 | E | FI CA | OUI DAIL | | | | START: | | -12-99 -15-99 | GROUN | ID ELEVATION 195.57 ID WATER ELEVATION 184.17 2/17/39 |
| MPLER OU Z | W NQ | 1D | | WEIGH! | OF HAN | IMER | 30° | 0-14 24 | 0 | . 18S. IN. C/ | HAMMER FALL ASING 24* SAMPLER ³⁰ " |
| CASING BLOWS PER FOC | MBE. | SAMPLE ELEV | | SAMPLE | 0.6 | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| 30 | RB | 73.5'-6 | 33.57 | 97% | REC RQD | | | | | 83.5 | ALTERATION. FROM 64' TO 64.5', A SUBVERTICAL FOLIATION JOINT, SMOOTH, CHLORITE ALTERATION, WITH TWO 10 DEGREE |
| 90 | | | | , | | | | | | | JOINTS ACROSS FOLIATION, ROUGH, CHLORITE ALTERATIO FAIR ROCK FROM 13.1' TO 18.5' |
| 100 | | | | | | | | | | | (3-65); GOOD ROCK FROM 18.5' TO 65.5 (2-65); VERY GOOD ROCK BELOW 65.5'. (1-65) |
| -20 | | | | | | | | | | | |
| 110 | | | | | | | | | | | |
| | | | | | | | | | | | |
| 120 | | 7 | | | | | | 1 | | | |
| Soil Enginee | | | · | | | | Driller: Helper: | | GUS SU STEVEN | | DEKE |

JUB COUNTION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc. SUBSURFACE EXPLORATION

SHEE! ___

SHEET BRONX, NY
LOCATION BRONX, NY
HOLE NO MG-820-99
LINE & SIA E: 524, 755.45

| | L.99 | 3018 | FOR: | METCAL | .F &E.D | DY- | HAZEI | N 84 5 | DAWYER | 1 | <u> </u> |
|--------|-----------------------------|--------------|------------------------------|---------------------|--------------------|-----------------|-----------------------------------|--|---------------------------------------|--------------------------|--|
| | | | EL CASING OUI DATE | | | | , siari [.] , finish: | | -5-99 -8-99 | _ GR | ROUND ELEVATION 190.94 ROUND WATER ELEVATION 185.23 |
| MPLE | ROD 2" NO BIT SIZE | | 1.D | WEIGHT INSIDE LI | of Hami Engih o | MER _ F SAMI | 30 PLER | 0-14 24 | 0 | LBS. IN. | HAMMER FALL CASING 24" SAMPLER ^{30"} |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV / FEET | SAMPLE | | ON SA | PER 6" | | DENSITY OR CONSIST. MOISTURE | PROFIL CHANC DEPTI | GE FIELD IDENTIFICATION OF SOIL |
| 0 - | | | | | 0.0 | 0 -12 | 12 - 18 | 18 - 24 | | 0'- | - TOPSDIL (3"). DARK |
| | | SS1 | 0'-2' | 12" | 7 | 5 | 5 | 4 | | 2' | GRAY SILTY SAND, ORGANIC MATTER, |
| i | | 582 | 2'-4' | 12" | 7 | 6 | 5 | 4 | | | LOOSE.(SM)(11-65) RUSTY BROWN SILTY |
| | | | 41-61 61-618" | 10" 5"2 | | 4 | 3 | 5 | | | FINE SAND. LOOSE |
| | | | | | | | 1 | |] | B' | (SM) (7-65) |
| - 10 - | | | | | | | | | 1 | | |
| | | | | | | | | <u> </u> | 1 | | |
| | | - | | | | | | | 1 | | GNEISS. LIGHT TO MEDIUM GRAY. |
| | | | | | | | | 1 | 1 | | MODERATELY HARD T HARD. SOME QUARTZITIC BANDS. |
| | <u> </u> | R1 | 8'-18' | | REC | | | | - | ŀ | MODERATELY WEATHERED TO 14', |
| - 20 | <u> </u> | | | | A KOL | | | | 1 . | Ì | SLIGHTLY WEATHERE TO UNWEATHERED ON |
| | | | | | † - | | # _ | | 4 | | THE REST OF THE |
| - | | | | | <u> </u> | | \pm | | | | JOINTS TO 16.5'. |
| | | | | | | - | | <u> </u> | | | FOLIATION AT 40 DEGREES TO SUB- |
| | | R2 | 18'-28' | 94 | Z REC | | - | + | - | | VERTICAL; GENERAL AT 60 DEGREES. |
| | | | | | Z RQ | _ | | +- | 7 | | |
| 30 | \ | | | | <u> </u> | - | 1 | 1 | 4 | | |
| | | - | | | | 1 | 1- | | \rightrightarrows | | |
| | | | <u> </u> | | | | | | | | |
| 1 | | | | | - | - | - | _ | | | |
| | | R | 3 28'-38' | | 9% RE | _ | | | - | | |
| -4 | | 1 | | | | 1 | | _1 | <u> </u> | | |
| So | il Engineer: | | · | · . · | | | Driller: | N -1 | REYNOL | DS E | BRIDGPAL |
| Dr | tting inspec | ctor: | | | | | Helper: | | ALVRO | LONI | DON |
| | | | | | | | _ | | | | |

JOB TOCATION:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| | L.99 | 9018 | | FOR: 1 | METCAL | F&ED | DY- | HAZEI | N & 1 | SAWYER | .] | |
|------------------|---|--------|--------------------------------|--------|---------------------------------|--------------------------|-----------------|----------|------------|-----------------------------|--------------------------|---|
| | | | H CA | | | | | | | -5-99 -8-99 | GR | ROUND ELEVATION 190.94 ROUND WATER ELEVATION 21939 |
| AMPI | 5 O.D. HW ER O.D. 2" OND BIT SIZE | | . ID | | WEIGHT | of Ham NGIH O | MER _ F SAMI | | 0-14 24 | | LBS. IN. | HAMMER FALL |
| | Casing Blows Per foot | SAMPLE | SAMPLE (| | SAMPLE | | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFII CHANG DEPTI | IGE FIELD IDENTIFICATION |
| 50 -10 -20 | | R5 | 38' -48' 48' -58 58' -68 | | 95% 95% 93% 93% 977 | REC ROD REC ROD | | | | | 71 | CLOSE TO MODERATEL CLOSE JOINT SPACIN TO 14'. FROM 13' T 13.8', FRIABLE, OXIDIZED, FRACTURED, A FOLIATION JOINT WITH A SUBHORIZONT AL JOINT. (3-65) MODERATELY CLOSE JOINT SPACING BELO 14', MOSTLY SUB- HORIZONTAL JOINTS. IN GENERAL, GOOD ROCK BELOW 14'. AT 49', A 40-DEGRE JOINT WITH FOLIATION TREND, ROUGH, ALTERED IN EPIDOTE, TIGHT. AT 54.5', A 60-DE- GREE FOLIATION JOINT, ROUGH, TIGHT. (1-65) |
| -4 | 6 Engineer: | 1 | <u> </u> | | | | | Orliler: | | REYNOLI | DS B | END OF HOLE 78' |
| | Eng Inspect | or: | | | | | | lelper: | 1 | ALVRO I | L.OND | DON |

JUD-LUCARUNE

· . . -

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

| | L.99 | 9018 | | FOR: I | METCALI | -%ED | DY-H | AZEN | I ANI | SAWY | ER | |
|--------|--------------------------------|------------------|----------------|--------|----------|------------|----------------|--------------|------------|-----------------------------|----------------------------|--|
| | | | FI CA | | | | | | | -22-99 -24-99 | GROU | ND ELEVATION 190.53 ND WATER ELEVATION 185.11 2126 189 |
| AMPLE | 00 HW R OD 2" ND 811 SZE | | _ 1D _ 1.D | | WEIGHT C | F HAMI | MER F SAMPI | | 0-14 24 | | _ L8S. IN. C | HAMMER FALL SAMPLER 30" SAMPLER 30" |
| | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE : | | SAMPLE | | BLOWS I | APLER | 18 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| ٥٠ | | | 0'-2' 2'-3' | | 3" | 7 | 3 48 | 5 | 7 /9" | | 2' | TOPSOIL (3"). DARK BROWN GRAY SILTY SAND, ORGANIC MATTER. (SM)(11-65 RUSTY BROWN SILTY |
| | | | | | | | | | | <u> </u> | | FINE SAND, TRACE GRAVEL (SM) (7-65) |
| - 10 - | | R1 | 3'-13' | | 99% | REC RQI | | | - | | | GNEISS. LIGHT TO MEDIUM GRAY, OXIDIZED ON JOINTS TO 30.5' FOLIATION FROM 60 DEGREES TO SUBVERTICAL. |
| | | | | - | | | | | | | | FROM 3' TO 11', 7' DEGREE FOLIATION JOINTS, OXIDIZED. ROCK QUALITY IM- PROVES FROM 11'. |
| 20 - | | R2 | 13'-23 | 7 | 100 | % RQD | REC | | | | | SOME 60-DEGREE FOLIATION JOINTS AND SUBHORIZONTAL JOINTS FROM 24'TO 39'. |
| -30 | | | | | | | | | | | | IN GENERAL ROCK CLOSELY JOINTED FROM 33' TO 35'. A SUBVERTICAL JOI FROM 41.5' TO 42' AND A SUBHORIZONT |
| | | R3 | 23'-3 | 3' | | % RQI | RE | | | | | JOINT AT 41.5' WI CHLORITIC ALTERATION. (2-65) |
| -40 | | | | | | | | | | | | |
| | Engineer: | | | | | | 0 | riller: | į | gus su | RI | |
| Drā | ing inspec | tor: | | | | | Н | eiper: | | STEVEN | LUEDI | DEKE |

LIOB LOCATION-

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

L.99018

| भाष ह सरव हर | | | H CASING OUI DATE | DAIE | | DAIE | . SIARI: | | -22-99 -24-99 | | NO REVARON 190.53 NO WATER REVATION 185.11 2 226 199 |
|-------------------|--|------------------|---------------------------------------|--------------------|----------|--|--|--|---------------------------|-------------------|--|
| SAMPLI | S OD HW ER OD <mark>2**</mark> ENO BIT SIÆ | | _10 | WEIGHT INSIDE I | ENGIH : | MMER _ Of SAM / | 30 PLER | 0-14 24 | 0 | _ LBS IN. C. | HAMMER FALL ASING 24" SAMPLER ³⁰ " |
| | CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE DEPIHS | SAMPLE | | ON SA | PER 6" | | DENSITY OR CONSIST. | PROFILE CHANGE | FIELD IDENTIFICATION OF SOIL |
| - 0 - | PER POOI | | | , 55 | 0.6 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | DEPIH | |
| 40 | | | | + | | | - | ļ., | | | ROCK BECOMES MODERATELY JOINTED |
| | | R4 | 33'-43' | 99% | REC | | | | | Ì | TO MASSIVE FROM |
| | | | | 80% | RQL | | | | | ļ | 43' TO 63'. (1-65) |
| | | | | | | <u> </u> | ├ | | | ļ | VERTICAL JOINT FRO |
| | | | | | | | | | 1 | 1 | 64' TO 66'. |
| | | | | | | | | |] | l | MODERATELY CLOSE |
| 50 | | | | | | | | ├ | 1 | 1 | JOINT SPACING BELO |
| - 10 - | | | | | | - | - | | - | | 66 . (2-63) |
| | | | | | | | | |] | Į. | |
| | | R5 | 43'-53' | | REC | + | - | \ | 4 | 1 | 1 |
| | - | - | † | 947 | RQI | 1— | _ | \vdash | 1 | | |
| | | | | | | | | |] | ì | |
| | | - | | | | ļ | | |] . | | |
| 60 | - | 1 | <u> </u> | - | | \vdash | | + | - | 1 | İ |
| -20 | | | | | | 1 | | | i | | 1 |
| | | | | | | | | |] | | 1 |
| × | | DE. | 53'-63' | - | RE | ᢤ | - | 4 | 4 | | 4 |
| Ì | | 1 10 | 9303. | 96 | | | 1 - | + | 1 - | Ì | |
| | | | | | | | | |] | | |
| | <u> </u> | | | | 1 | - | - | - | _ | | |
| Ì | | 1 - | | | - | | +- | + | -} | Ĭ | |
| 70 | | | | | | | 1 - | 仜 ̄ | - | | |
| -30 | | | · | | <u> </u> | <u> </u> | | | 7 | | |
|] | | - B7 | 63'-72' | | / RE | | | - | | 721 | 1 |
| | | 1-84 | 63: -/2' | | / RO | | <u> </u> | +- | - | 12- | - |
| 1 | | 1 | | | | | | | | Ì | END OF HOLE 72" |
| | - | - | | | | +- | <u> </u> | _ | 4 | ľ | |
| | - | +- | | +- | +- | | + | + | \dashv | | |
|] | | | | <u> </u> | 1 | | 1 | 1 | _ | | |
| 80 | | | | | | \perp | | | | | 1 |
| -40 | ــــــــــــــــــــــــــــــــــــــ | | | | | | | <u> </u> | _L | <u> </u> | <u> </u> |
| Soil | Engineer: | | | | | (| Onlier: _ | 6 | SUS SUF | श | |
| Drift | ing Inspect | or: | · · · · · · · · · · · · · · · · · · · | | | | ielper: | | STEVEN | LUEDD | EKE |

JUB LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

L.99018

| SHEEL | OF3 |
|------------|----------------|
| LOCATION. | BRONX, NY |
| HOLE NO _ | MG-B22-99 |
| | N: 322,879.17 |
| LINE & STA | E. COA 040 81- |
| OFFSET | E:624,842.21 |

| DEPIH | | 11 | IT CASING OUT ALL CASING OUT DATE | DAIE: | | DAIE | . Stari: . Finish. | | -9-99 -10-99 | GROU GROU | NO BLEVARON 193.22 NO WATER BLEVATION 179.11 21/1199 |
|--------|------------------------------------|--------|--------------------------------------|--------------------|-------------------|-------------------|-----------------------|---------------|---------------------------------------|----------------------------|---|
| SAMPL | S OD HW ER OU 2" OND BI SIZE | | _ ID | WEIGHT INSIDE L | of Ham Engih (| amer _ Df Sami | 30 PLER _ | 0-14 24 | 0 | _ LBS. IN. C | HAMMER FAUL ASING 24" SAMPLER ³ O" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV / FEET | SAMPLE | 0.4 | ON \$A | PER 6' MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| - 0 - | | | 0'-2' | 18" | 4 | 3 | 2 | 2 | | 0'- 2' | TOPSOIL (5"). RUST BROWN SILTY SAND, ORGANIC MATTER. |
| | | | 2'-4' 4'-6' | 18" | | 2 | 3 | <u>4</u> 5 | | | LCOSE.(SM) (11-65) RUSTY BROWN SILTY FINE TO MEDIUM |
| ., | | SSS | 6'-8' 8'-9' 10'-10.4' | 18" 12" 5" | 14 | 7 100 /5" | 7 /6" | 8 | | 8" | SAND, TRACE OF GRAVEL FROM 5' TO 8'. LODSE TO MEDIU DENSE.(SM)(7-65) |
| 10 - | | | | | 120 | | | | | | BELOW B', GREENISH GRAY SILTY SAND. |
| | | SS7 | 15'-15.2' | 3" | 100 | /3" | | |] | | GRAVEL, COBBLES. DENSE. TILL |
| -20 | | | | | | | | | | 17' | MATERIAL. (SM AND GM)(6-65) TAN BROWN SILTY F- |
| | | SSE | 201 –221 | 10' | 25 | .38 | 40 | 40 | | | SAND WITH ROCK FRAGMENTS (GNEISS) MICA, COBBLES, PROBABLE BOULDERS. |
| | | SS | 25'-26.2' | 12' | 57 | 61 | 100 | /3 | 11 | 28' | VERY DENSE. POSSIBLE SAPROLITI SOIL(DECOMPOSED ROCK). (SM AND GM) |
| 50 | | | | | | | | | - - - | | (6-65/5-65) |
| | | R1 | 28' ~33' | | REC | | | | - - - - | | GNEISS. OXIDATION ON JOINTS TO 39.5' AND 55'. OXIDIZED, FRACTURED, SOFT TO MODERATELY HARD, |
| -40 | | | | | | | | | | | FRIABLE FROM 28' 7 31', WITH FOLIATION AT 40 DEGREES. (4-65/3-65) |
| Soli | Engineer: | | | | | 0 | riller: _ | G | ius sur | !I | |
| Dritti | ng Inspecto | r: | | | | н | elper: _ | <u>'</u> 8 | TEVEN | LUEDDI | <u> </u> |

JUB LOCATION.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc.

SUPSURFACE EXPLORATION

| | L. 5 | 3018 | F1 | OR: ME | ILAL | _F &E ! | - אמט | HAZE. | N AN | D SAWY | EK | |
|------------|---------------------------------------|----------|----------------|------------|-------------------|------------|------------------|--------------|----------------|--------------------------|-------------------|---|
| HI94C | | ! | I II CASING OU | NG OUI DA | JE | | DAI | SIARI: | 2 | -9-99 -10-99 | _ GROU | IND ELEVATION 193.22 IND WATER ELEVATION 179.11 2111199 |
| AMPL | 3 O.D HW ER O.D 2" DND BIT SIZE | | 10 | V | Veighi NSIDE U | OF HAN | AMER _ OF SAM | 30 PLER _ | 0-14 24 | 0 | _ LBS. IN. C | HAMMER FALL CASING 24" SAMPLER ³⁰ " |
| | CASING BLOWS | SAMPLE | SAMPLE DEF | PIHS EI | SAMPLE | | | PER 6" | | DENSITY OR CONSIST | PROFILE CHANGE | FIELD IDENTIFICATION OF SOIL |
| o – | PER FOOI | us Z | | | 3 E | 0.6 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | DEPTH | |
| 40 | | | | | | | | | | | | |
| | | R2 | 33! -43! | | | REC RQD | | | | | | GNEISS BECOMES MEDIUM GRAY, |
| | | | | | | | | | | | | SLIGHTLY WEATHERED AND MODERATELY HAR |
| | | | | | - | | | | | | | FROM 31' TO 39.5'. WITH FOLIATION SUB |
| 5Q 10 - | N 10 1 | | | | | | - | | | | | HORIZONTAL TO 45 DEGREES. (3-65) |
| | | | | | \neg | | | | | 1 | Ì | ROUGH JOINTS TO |
| | | R3 | 43' -53' | | | REC | | | _ | 1 | | 39.5', MAINLY SUB- |
| | | | | - | | | - | | | 1 | | ACROSS FOLIATION. AT 38.8', A 70- |
| | | | | | | | | ļ | | | | DEGREE FOLIATION |
| 60 | | | ļ | | | | | | | 1 | | JOINT, ROUGH, TIGHT, OXIDIZED. |
| -20 - | | | | | | | | | | 1 | | GOOD ROCK BELOW |
| | | R4 | 53'-63' | | 95% | REC | | | - | } | 1 | 39.5'. MODERATELY HARD TO HARD, WITH |
| | | - | | | | RQI | | | | 1 - | İ | FOLIATION SUB- |
| | | Ι | 1 | | 3 | | | | | - | | (PREDOMINANT) TO |
| | | | | | | | | | | _ | | SUBVERTICAL. MODERATELY CLOSE |
| 70 -30 | | | | | | | <u> </u> | | 1 | 1 | | JOINT SPACING FRO |
| | | 1 | 30000 1 1 | - | | | | - | | - | | BELOW 58'; CLOSE SPACING FROM 48' |
| | | R5 | 63'-73' | | | REC | | | 1 | 1 | | 58'. FROM 49.5' TO 51' |
| | | 1 | | | 307 | RIZI | 1 | | <u> </u> | 1 | | A SUBVERTICAL |
| | | | | | | | | | 1 | _ | | JOINT, SMOOTH, MIC TIGHT WITH TWO 20 |
| 80 | | | | | | | 1 - | + | | 4 | | DEGREE JOINTS ACROSS FOLIATION, |
| - 40 | | <u> </u> | 1 | | | | | | | 1 | <u> </u> | TIGHT, ROUGH. |
| Soit | Engineer: | | | | | | 0 | riller: _ | G | US SUF | RI . | |
| Drilli | ng Inspecto | n: | | | | | | | ==== | TEVEN | LUEDD | EKE |
| | 3 | | | | | - | * | elper: . | | | | |

THOS COCHINON

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

DATE CAN

SHEET 3 OF 3 LOCATION BRONX, NY HOLE NO MG-B22-99 LINE & STA. N: 322, 879.17

| CUNTRACT | HED-5 | 43 | | s | UBSUR | FACE | SXPLO | RATIO | N . | 0 | FISET E: 624, 842.21 |
|---|------------|------------------------|----------|--------------------|--------|----------------|---------------------|------------|-----------------------------|----------------------------|---|
| L_ | 99018 | | FOR: | 1ETCAI | LF'&E | -Y@ | HAZE | ER | | | |
|))))))))) | ; | L11 C/ 1 ALL CASING | OUI DAIE | DAIL | | DAIE | . SIARI . FINISH | 2 | - 9-9 9 -10-99 | GRO | XIND ELEVATION 193.22 XIND WATER ELEVATION 179.11 2111199 |
| Casing o.d. H Sampler o.d. 2 Diamond bit sl | | _10 | | WEICHI #NSIDE (| OF HAN | MMER OF SAM | 30 PLER _ | 0-14 24 | 0 | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLER30" |
| CASING BLOWS PER FOO | WPL WB6 | SAMPLE (| | SAMPLE | 0.6 | ON SA | PER 6' | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION |
| 0 | R6 | 73'-83' | | 97% | F:EC | | | 10 2 | | 83' | FROM 54.5'TO 55.5' TWO 60-DEGREE JOINTS ACROSS FOLIATION, OXIDIZED |
| 90 | | | | | | | | | | | SMOOTH, TIGHT, WITH TWO 10-DEGREE JOINTS ACROSS FOLIATION, ROUGH. TIGHT. |
| -10 | | | | | | - | | | | | AT 75',76.7' AND 77.5', 75-DEGREE FOLIATION JOINTS, SMOOTH, TIGHT, MICA. (1-65) |
| 100 | | | | | | | | | | | END OF HOLE 83' |
| - 20 | | | | | | | | | | | |
| | | | | | | | | | | | |
| 30 | | | | | | | | | - - - | | |
| | | | | | | | | | | | |
| 120 | | | | | | | | | | | |
| Soil Engineer | | • • | | | | ¤ |)riller: _ | | ius sur | | |
| Dritting Inspe | ctor: | | | | | | lelper: . | | TEVEN | LUEDI | DEKE |

JOB LOCATION.

MOSHOŁU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 1 0F 3
LOCATION BRONX, NY
HOLE NO MG-B23-99
LINE & STA 0FFSET E: 624, 872.68

L.99018

| | | | II CASING OUI ALI CASING OUI DATE | | | | | | -3-99 -4-99 | GROU GROU | NO ELEVATION 192.34 NO WATER ELEVATION 180.88 3 24 193 |
|-------|---------------------------------------|--------|--------------------------------------|--------------------|-------------------|-----------------|-------------|------------|---------------------------------------|----------------------------|---|
| SAMPL | ER OD. HW ER OD 2" IND BIT SIZE | | .10 | WEIGHT INSIDE L | of Ham Ength C | IMER DF SAMP | 30 168 _ | 0-14 24 | 0 | , LB\$. IN. C | HAMMER FAUL ASING 24" SAMPLEP ^{30"} |
| - a - | CASING BLOWS PER FOO! | SAMPLE | SAMPLE DEPIHS ELEV - FEEL | SAMPLE | | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| - u - | | | 0'-2' | 6" | 1 3 | 1 3 | 2 | 2 | | 0'- 4' | TOPSOIL 4". DARK BROWN SANDY SILT, SOFT TO MEDIUM STIFF, SLIGHTLY |
| | | SS4 | 4'-6' 6'-7' 8'-8.5' | 8" 3" 1" | 3 45 100 | | | 4 /0" | | | PLASTIC, DRGANIC MATTER.(ML)(11-65) RUSTY BROWN SILTY F-M SAND, TRACE |
| 10 - | | | | | | | | | | | GRAVEL. MICA, ROCK FRAGMENTS, COBBLES AND BOULDERS PRESENT BELOW 6' WHERE MATERIAL IS |
| | | R1 | 14'-15' | | REC RGD | | | | | 14' | GENERALLY VERY DENSE. POSSIBLE SAPROLITIC SOIL (DECOMPOSED ROCK). |
| 20 - | | | | | | | | | | | (SM AND GM) (6-65/5-65) GNEISS. LIGHT TO MEDIUM GRAY, |
| | | R2 | 14'-25' | 100 | % RGE | REC | | | - - - | | GENERALLY AMPHIL- BOLITIC WITH IN- TERMITTENT QUARTZITIC BANDS. QUARTZITIC FROM 37 |
| -30 | | | | | | | | | | | TO 39', FAINTLY WEATHERED TO UNWEATHERED, FOLIATION AT 50 TO 75 DEGREES. |
| | | R3 | 25'-35' | | 0 % % RGI | REC | | | | | MOSTLY AT 60 DE- GREES. OXIDATION ON JOINTS TO 15' AND FROM 38.5' TO 39.25'. MODERATELY |
| -40 | | | | | | | | | <u> </u> | | CLOSE JOINT SPACING. |
| 1 | Engineer: | | | | | | diler: _ | r | AKE HA | | |

JUD EQUATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 4 OF 3 LOCATION BRONX, NY HOLE NO. MG-B23-99 LINE & SIA N: 323, 124.25 OFFSET E: 524, 872.68

| | L.9 | 9018 | | FOR: | TETCAL | F&EI | ו-צם | HAZEI | N AN | — D SAWY! | ER | |
|-------------|---|---------------------------------------|-------------------|-----------|---|----------|----------------|----------------------|------------|------------------------------|--------------------------|--|
| DEPHI | | H | H. CASING | asing out | DAIE | | DAIE | . SIARI: . FINISH | 3 | -3-99 -4-99 | — e | COUND ELEVATION 192.34 COUND WATER ELEVATION 180.88 |
| SANIPL | G OD <u>HW</u> ER O.D <u>2''</u> DND BII SIZE | | _ I.D | | WEIGHT INSIDE L | OF HAM | IMER _ | 30 RER | 0-14 24 | 0 | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLEF30" |
| | CASING BLÓWS PER FOOI | SAMPLE NUMBER | SAMPLE ELEV. / | 80 =0 T-1 | SAMPLE | ا ه ۰ ه | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFII CHANG DEPTI | GE FELD IDENTIFICATION |
| - 0 - 40 | | | | | | - | 0.12 | 12 . 30 | 10 - 24 | | | FROM 14.7' TO 15', |
| 40 | | | | | | | | | | | | A FOLIATION JOINT AT 60 DEGREES, ROUGH, OXIDIZED, |
| | | R4 | 35' -45' | | 90% | % RQD | REC | | | | | OPEN. FROM 18.5' T 29.5' A FOLIATION JOINT AT 75 DE- |
| 50 | | | | | | | | | | | | GREES, ROUGH, TIGHT. |
| - 10 - | | | | | | | | | | | | FROM 34' TO 35', ROCK IS JOINTED ALONG FOLIATION WITH FOUR |
| | | R5 | 45' –55' | | 100 | % RQD | REC | | |] - | | JOINTS AT 70 DEGREES, ROUGH, TIGHT. |
| 60 -20 | | | | | | | | | | | | FROM 56.5'TO 56.8' A FOLIATION JOINT AT 60 DEGREES, ROUGH, TIGHT, MODERATELY ALTERED |
| | | R6 | 55'-65 | , | 98% | REC | | | | | | IN CHLORITE, WITH 5-DEGREE JOINT ACROSS FOLIATION, ROUGH, TIGHT. CLOS JOINT SPACING. |
| 70 | | ļ | 1 | | | | | | <u> </u> | | | |
| -30 | | | | | | - | | | | | | FROM 65' TO 66.5' AND 77.5' TO 78.4' A 70-DEGREE FOLIATION JOINT, |
| | | R7 | 651-75 | 7 | 7 | % ROI | RE | | | - | | SMOOTH, OPEN, SOFT, ALTERED IN CHLORITE, WITH TWC 5-DEGREE JOINTS |
| 80 | 1 | | 75'-80 | 7 | |) X | RE | | | | 80 | ACROSS FOLIATION, ROUGH. |
| Soil | Engineer: | · · · · · · · · · · · · · · · · · · · | · · · · · · | | | | 0 | riller: _ | J | AKE HA | ARR IS | <u> </u> |
| Dritt | ing Inspecto | x: | | | | | н | elper. | <u>0</u> | AVE HA | RRIS | 3 |

JOB LOCATION.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 3 05 3
LOCATION BRONX, NY
HOLE NO. MG-B23-99
LINE & STA E: 624, 872. 68

| | L.99 | 9018 | | FOR: M | - IETCAI | _F&EI | -Yac | HAZEN | I ANI | O SAWY | ER | OFFSE | • |
|-------------------------|---------------------------------------|--------|----------|----------|--------------------|-------------------|--------|--------------|------------|---------------------------------------|-----------------------|-------|---|
| DI PIH | | H | FI CA | OUI DAIL | | | | | | -3-99 -4 - 99 | _ G | ROUND | ELEVATION 180.88 WATER ELEVATION 180.88 3124199 |
| CASIN SAMPI DIAMI | G O.D HW ER O.D 2" DND BII SIZE | NQ | _ 1D | | WEIGHT INSIDE L | OF HAN ENGIH (| AMER _ | 300 |)-14 24 | 0 | LBS. IN. | CASI | HAMMER FALL NG 24" SAMPLER ^{30"} |
| 50 00 | CASING BLOWS PER FCOI | SAMPLE | SAMPLE (| DEPTHS | SAMPLE | D-6 | | PER 6' MPLER | 18 . 24 | DENSITY OR CONSIST. MOISTURE | PROFI CHAN DEPT | GE | FIELD IDENTIFICATION OF SOIL |
| - 0 - | | | | | | | | | 10 20 | | | - 14 | IN GENERAL, THE ROCH QUALITY IS GOOD. (2-65) |
| | | | | | | | | | | | | | END OF HOLE 80' |
| | | | | | | | | | | | | 1 | WATER PRESSURE TESTS IN ROCK FROM 14' TO 74'. |
| — 10 · | | | | | | | | | | 1 | | | PIEZOMETER INSTALLED AT 68.57 |
| | | | | | + | | | | | | | | |
| | | | | | | | | | | | | | |
| - 20 | | | | | | | | | | 1 | | | |
| | | | | 88 × 28 | | <u> </u> | | - | | | | į | |
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| - 30 | | | | | | | - | | ļ | - | | | |
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| -4 | , 📃 | | | | | <u> </u> | | | | | | | |
| | Engineer: | | | | | | | riller: _ | J | IAKE HA | ARR I | 5 | |
| Dri | ling Inspect | or: | | | | | F | lelper: . | | AVE HA | ARRI | S | |

JOB LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 1 OF 2
LOCATION BRONX, NY
HOLE NO. MG-B24-99
UNE & SIA. N: 323, 401.34
OFFSET E: 624, 904.28

L.99018

| CASING SAMPL | 3 00 HW ER 00 2" | FI | I H CASING QUI I ALL CASING QUI DAIE _ I D | WEIGHI | DATE. START: 2-23-99 GROUND ELEVATION 185.74 DATE. FINISH 2-24-99 GROUND WATER ELEVATION 17 WEIGHT OF HANIMER 300-140 LBS. HAMMER FALL INSIDE LENGTH OF SAMPLER 24 IN. CASING 24" SAMPLER 30 | | | | | | | | |
|-----------------|-----------------------------|--------|--|--------|--|-----------------|--------|------------------|--------------------------------------|--------------------------|---|--|--|
| - 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPIHS ELEV / FEET | SAMPLE | 0 - 0 | | MPLER | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFIL CHANG DEPTH | FIELD IDENTIFICATION | | |
| | | | 0' -2' 2' -4' | 11" | | 2 | 2 5 | .3 | | 0'- 2' | TOPSOIL (3). DARK GRAY SILTY SAND, ORGANIC MATTER. LOOSE. (SM) (11-65 | | |
| - 10 | | SS4 | 4'-6' 6'-8' 8'-8.1' | | 14 29 100 | 17 37 /2" | 18 | 21 100 /4" | 1 | 11' | RUSTY BROWN SILTY FINE SAND, SOME GRAVEL FROM 6' TO 10'. MEDIUM DENSE TO VERY DENSE.(SM) | | |
| | | | | | | | | | | | GNEISS. MEDIUM GRAY, HARD. OXIDATION ON JOINT FROM 11' TO 19' AN FROM 36' TO 41.5'. FOLIATION AT 60 DE GREES TO SUB- | | |
| 20 - | | R1 | 11'-21' | | REC RQD | | | | | | VERTICAL TO IN- DISTINCT. ROCK SLIGHTLY SCHISTOSE BELOW 32'. | | |
| | | | | | | | | | | - | SUBVERTICAL JOINT ACROSS FOLIATION FROM 24' TO 26' AL TERED IN EPIDOTE AND CHLORITE WITH | | |
| -30 · | | R2 | 21'-31' | | REC | | | | | | 20-DEGREE JOINT ACROSS FOLIATION, ROUGH, TIGHT, EPIDOTE. GENERALLY GOOD ROCK FROM 26' TO 36'.(3-65/2-65) | | |
| - 40 | | | | | _ | | | | | | | | |
| İ | Engineer: _ | ř | | | | Dr | iller: | | YNOLDI | | - New - | | |

JOB LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 2 OF 2
LOCATION MG-B24-99
HOLE NO N: 323, 401.34
LINE & STA E: 624, 904.28

L.99018

| CASM | | | | | OF HAM | DAIE | . FINISH | 2 0-14 | -23-99 -24-99 0 | _ GRO | HAMMER FALL CASING 24" SAMPLER 30" |
|--------------|-----------------------------|--------|----------------------------|--------|----------|----------------|----------|-----------|------------------------------|----------------------------|--|
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPTHS ELEV FEET | SAMPLE | | BLOWS ON SA | MPLER | | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIFE D EDENTIFICATION |
| - 0 - 40 | | | 31'-41' | | REC | 6 -12 | 12 · 18 | 18 · 24 | WOISTONE | - | FROM 36' TO 41.5', A SUBVERTICAL JOINT, OXIDIZED, ALTERED IN CHLORIT AND EPIDOTE, WITH |
| 50 - 10 - | | R4 | 417-517 | 99% | REC | | | | | | NINE 10-DEGREE JOINTS ACROSS FOLIATION. (3-65) JOINTS BELOW 51' |
| | | | | 98% | RQD | | | | | | ARE SMOOTH, TIGHT, AT 30 TO 40 DE- GREES. GOOD ROCK FROM 41.5' TO 65', WITH MODERATELY CLOSE |
| 60 -20 | | R5 | 51'-61' | 100 | % RQD | REC | | | | | JOINT SPACING. (1-65) |
| | | R6 | 617-657 | 967 | % RQĐ | REC | | | | 651 | |
| 70 -30 | | | | | | | | | | | END OF HOLE 65' |
| 80 | | | | | | | | | | | |
| Soll | Engineer: | | | | · ,_ | D | riller: | R | EYNOLI | S BR | I DGPAL |
| Drai | ing Inspect | or: | - | | | н | elper: | A | LVRO L | וסתאס | <u> </u> |

TOR LOCATION

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MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George inc.

SUBSURFACE EXPLORATION

L.99018

| rų Piu | | H | II CASING OUI ALL CASING OUI DATE. | | | DAIF | , FINISH | | -25-99 | GROUI | ND ELEVATION 181.35 ND WATER ELEVATION 2/26/39 |
|--------|------------------------------------|--------|---------------------------------------|--------------------|--------------------------|-------------------|-----------------|-----------------|------------------------------|----------------------------|--|
| SAMPL | ER OD HW ER OD 2" END BH SEE | | _10 | WEIGHI INSIDE L | of Haw Engih C | IMER _ OF SAME | 30 RER | 0-14 24 | 0 | _ IBS IN. C | HAMMER FALL ASING 24" SAMPLER30" |
| | Casing Blows Per foot | SAMPLE | SAMPLE DEPTHS ELEV / FEET | SAMPLE RECOVERY | | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| - v - | | 552 | 0'-2' 2'-4' 4'-5,2' | 24" | | 17 25 | 11 | 10 25 /3" | | 6' | RUSTY BROWN SILTY F-M SAND, TRACE TO SOME GRAVEL, MEDIL DENSE TO VERY DENSE. (SM,SP-SM) (6-65) |
| - 10 - | | SSS | 6'-8' B'-10' 10.1'-10.7' | 12" | 46 37 49 | 36 100 | 30 76 /3" | 50 | | 11.6 | YELLOW BROWN SILTY F-M SAND, SOME GRAVEL, MICA, ROCK FRAGMENTS (GNEISS) VERY DENSE. POSSIBLE SAPROLITY SGIL (DECOMPOSED ROCK). (SM AND GM) (6-65/5-65) |
| – 20 · | | | 11.6'-16.6' | 80% | REC ROD REC ROD | | | | | | GNEISS. MEDIUM GRAY. WEATHERED AF FRACTURED FROM 11.6' TO 23'. FOLIATION AT 50 DEGREES TO SUBVER ICAL. OXIDATION OF |
| -30 | | | 21.6'-26.6' | 437 | REC | | | | | | JOINTS TO 23'. A SUBVERTICAL FOLIA TION JOINT FROM 2 TO 23', OXIDIZED, SOFT, FRIABLE, OPE IN COMBINATION WI SIX SUBHORIZONTAL |
| | | | 31.6'-35' | 957 | ROI ROI REC | | | | | 357 | JOINTS, OXIDIZED, ROUGH, OPEN. (3-65 ROCK QUALITY IM- PROVES BELOW 23' WITH MODERATELY CLOSE JOINT |
| Ì | Engineer: | | | | | _ | riller: | 7 | REG MA | And the second | SPACING. |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK

CONTRACT HED-543

JAMES CONTRIBUTE.

WGI Warren George Inc.

SUBSURPACE EXPLORATION

SHELT 2 OF Z
LOCATION BRONX, NY
HOLE NO MG-B25-99
LINE & STA E: 624, 955.96

| | L. 9 | 9018 | | FOR: | - METCAI | _F&EI | DDY- | HAZE | N ANI | — D SAWYI | | 777561 |
|----------------|--------------------------------|------------------|---------------------------------------|----------|--------------------|-----------------|--------|----------------------|--------------|-----------------------------------|----------------------------|---|
| DEPIH DEPIH | | H | I II CA | SING OUI | DAIT | | DAII | , slari E, finish | 2 | -24-99 -25-99 | GRC | OUND ELEVATION 181.35 DUND WATER FLEVATION 177.13 21,26197 |
| SAMPLE | OD HW ROD 2" ND BIT SIZE | | 10 | | WEIGHT INSIDE I | OF HAI ENGTH | MMER _ | 30 Puer _ | _ LBS IN. | HAMMER FALL CASING 24" SAMPLER O" | | |
| | CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE ELEV | | SAMPLE | SAMPLE O O O | | | | DENSITY OR CONSIST MOISTURE | PROFILE CHANGI DEPTH | RELD IDENTIFICATION |
| - 20 - | | | | | | | | 12 - 16 | | | | BELOW 26.5', CHLORITE ALTERATION ON JOINTS ACROSS FOLIATION AT 10 TO 25 DEGREES. (2-65) END OF HOLE 35' |
| -40 - | | | | | | | | | | | | |
| 1 | ingineer: | | | | | | _ | riller: _ | | REG MA HEO RO | | |
| 1 | | | · · · · · · · · · · · · · · · · · · · | | | _ | — н | elper: . | | 1,000 1/0 | | |

LICE LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| HEET | 1 05 2 |
|-----------|----------------|
| OCATION. | BRONX, OF NY |
| IOLE NO | MG-826-99 |
| INE & STA | N: 322,869.32 |
| OFFSET | E: 524, 941.05 |
| J. 1 | |

L.99018

| | | | | FOR: | TETCH | -rext | ד עט – | MAZE | N AN | D SHWY | EK | | |
|-----------|-----------------------------------|------------------|--|-------------|--------------------|--|---------|---------------------|--|---|--------------------------|---------------------------------|------------------------------------|
|) P P P P | | II | H C/ | ISING OUI | DATE _ | | DAIE | . Start . Finish | - | -5-99 -8-99 | GF | OUND ELEVATION OUND WATER EU | 191.48 EVARION 175.48 215(99 |
| AMPL | GOD HW ER OD Z" OND BII SZE | | _ 10 | | WEIGHI INSIDE L | of Han Engih (| AIMER _ | 30 PLER | | AMIVER FALL SAMPLER ^{30"} | | | |
| , | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE I | | SAMPLE | 0.6 | | MPLER | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFII CHANG DEPTI | FIEL | D IDENTIFICATION OF SOIL |
| 0 - | | | | | | - | 0.12 | | 10 - 24 | | 0'- | TOPSO | IL (3"). DAR |
| | | 551 | 0'-2' | | 10" | 5 | 3 | 2 | 2 | 1 | 2' | | SILTY SAND, |
| | | SS2 | 2'-4' | | 14" | 4 | 6 | 6 | 9 | | ļ | | IC MATTER. .(SM)(11-65) |
| | | SSS | 4'-6' | | 3" | 28 | 100 | /1" | - | ł | | TAN B | ROWN SILTY |
| | | | | | | | | | | | | FINE : | SAND, TRACE |
| | | <u> 554</u> | <u>67-87</u> | | 3" | 19 | _22_ | 27 | 31 | ļ | | GRAVE | L TO 4', SOM L TO 8', SOM |
| 10 - | | | 8'-10' | | 58" | REC | BOL | LDE | RS | | 1 | | L 10 6', 50M ERS'(8' TO 1 |
| _ | | SSE | 10'-10. | 2' | NR | | | - | |] | ł | AND 1 | 3' TO 23'). |
| | | SSE | 12'-12. | 6' | 5" | 34 | 100 | /1' | - | 1 | 1 | | ALLY DENSE. ND GM)(6-65) |
| | | | | | | | | | | 1 | 1 | (0., ., | |
| | <u> </u> | - | | | - - | | | | | 4 | P | | |
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| - 20 - | | | - | | - | | | - | | -{ | | | |
| -20 | | | | | | | | | | 1 | | | |
| | - | R2 | 13'-23' | | 222 | REC | POI | I DE | De | - | 1 | | • |
| | | | 23' -23. | | 3" | 100 | | | - KS | † • | | | |
| | | - | <u> </u> | <u>-</u> | | | | | |] | | ł | |
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| - 20 | | | | | + | | - | - | ₽- | 4 | 1 | - | |
| -30 | | | | | | | | | | j | 1 | | |
| | - - | | 23.5'- | 20 EI | A.IPS | <u> </u> | - | | | 4 | 1 | | |
| | | | 833.57- | | 3" | | /5 | - | + | - | 33 | , | |
| | | | | | | | | | | 1 | 1 20 | | Y BROWN SILT |
| | | | | | 上 | | _ | | | 1 | | FRAGI | SAND WITH ROO MENTS(GNEISS |
| | | | + | | _ | | - | 1- | | - | - | | , COBBLES. RALLY VERY |
| - 40 | | R4 | 33.51- | 40' | NR | | | | | | | DENS | |
| | | | | | , <u></u> - | | | | | 110 0110 | | | |
| Soa | Engineer: | | | | | | D | riller: _ | G | ius suf | <.1 | | |
| Dritte | ng Inspecto | xr | | | | | н | elper: . | 8 | TEVEN | LUEI | DEKE | |
| | | | | | | | | | | 10 TO | | | AND 100 PROPERTY OF |

JOB LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHE(1 | cr. 2 | - |
|------------|-------------|----|
| LOCARON_ | BRONX, NY | |
| HOLE NO _ | MG-826-99 | |
| LINE & SIA | N: 322,869. | 32 |
| OFFSE! | E:624,941. | 05 |

L.99018

| OI PIH Di PIH | | () ti | H CASING OUI DAIL | DAIE | | | | | -5-99 -8-99 | GR | OUND ELEVATION 191.48 OUND WATER ELEVATION 175.48 215.39 |
|------------------|-----------------------------|------------------|--|--|--------------|--|--------------|--------------|---------------------------|-----------------|--|
| SAMPLI | ER O.D 2" | | | WEIGHT INSIDE I | | | | | 0 | _ L85. IN. | HAMMER FALL CASING 24" SAMPLER30" |
| | CASING BLOWS PER FOO! | SAMPLE NUMBER | SAMPLE DEPIHS ELEV . FEET | SAMPLE | | | PER 6 | | DENSITY OR CONSIST. | PROFIL CHANG | FELD IDENTIFICATION |
| - 0 - | | | | | 0.0 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | DEPIH | - |
| | | 555 | 40'-40.5' | 3" | 100 | 76" | | | | 40. | 5' POSSIBLE SAPROLITI |
| 40 | | | | | | | | | | | SOIL (DECOMPOSED ROCK). (SM AND GM) |
| | | 95 | 40.5'-45.5' | 70% | REC | | | | | | (6-65/5-65) |
| i | | 12.0 | | 607 | ROD | | - | | ł | | CNETCO |
| | | | | | _1/// | | | - | i | | GNEISS. AMPHIBOLITIC, |
| | | | | | | | | | 1 | | WEATHERED AND |
| 50 | | | _ | | | | | |] | | FRACTURED FROM |
| - 10 - | - | | | ╅— | | | | <u> </u> | | | 40.5' TO 42'. |
| | | | | + | | - | - | | 1 | | BOOK OUR STATE |
| | | | | | | | _ | | | | ROCK QUALITY IM- PROVES AT 42' HAR |
| | | | | | 5 - 40°- | 1000 | | | 1 | | SLIGHTLY WEATHERE |
| | • | . R6 | 45.5'~55.5' | 96% | REC | | | | 1 | | TO UNWEATHERED, |
| | | | | 927 | RQD | | | |] | | MEDIUM GRAY GNEIS |
| | | | | - | | | <u> </u> | | | | BELOW 42'. FOLIAT |
| 60 | - | | | + | | _ | - | | - | 1 | ION AT 20 TO 40 |
| -20 - | | | | | | | | | 1 | | DEGREES. MODERATE |
| -20 | | | | | - "- | | | † | 1 | | CLOSE JOINT SPACING. A FEW |
| | | | | | | | | | | | SUBHORIZONTAL |
| | | - | | — —— | | | L | |] | 1 | JDINTS ACROSS |
| | | D7 | CE 5. CE 5. | - | | | _ | | * | 1 | FOLIATION. |
| | | R7 | 55.5'-65.5' | 99% | | | ├ | ├ | 4 | L | GENERALLY GOOD |
| | | | | 3.47 | KAL | | | ╁ | 1 | | GOCK. (1-65) |
| | | | | | | | | | 1 | | AT 57.4', A SMOOT |
| 70 | | | | | | | | |] | | JOINT WITH |
| -30 - | - | | | | | | <u> </u> | | 1 | | FOLIATION TREND A |
| | — | + | | | 1000 | | ├ | | 4 | | 30 DEGREES. AT |
| | | 1 | | | | | | | -{ | | 58.6', A SMOOTH |
| | | | | 1 | | | | 1 | 1 | 1 | FOLIATION JOINT A |
| ļ | | RB | 65.5'-75.5' | 997 | REC | | l – | 1 | 1 | 75. | |
| ŀ | | ļ | | | ROI | | | | | 1 | |
| İ | | + | | | | | | | 1 | | |
| مما | | | | | | - | _ | 1 | 4 | 1 | END OF HOLE 75.5' |
| 80 | | 1 | | + | | | ┼ | + | - | | Ì |
| | Engineer: | | | | · | J | iller: | G | US SUR | I | · · · · · · · · · · · · · · · · · · · |
| Orlitin | g Inspector | | | | | | | S | TEVEN | LUEDI | DEKE |

JOB LOCATION.

. . .

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

1.5

SHEET 1 4

LOCATION BRONX, NY

HOLE NO MG-B27-99

LINE & STA E1 524, 959.81

L.99018

| IN PIR | | 11 | L IF CASING OUI DATE. | DAIF | | . GAII DAIF | . SIAIRI | | -3-99 -4-99 | GR | OUND ELEVATION 192.16 OUND WATER ELEVATION 185.47 | | |
|----------------------------|---|------------------|------------------------------|--------------------|------------|----------------|-----------|---------|---------------------------------------|---------------------------|---|--|--|
| C ASIMU SAMPLI DIAMO | S OD HW ER OD 2" END BII SIZE | NQ | _ ID | WEIGHI INSIDE L | OF HAM | | | | 0 | IBS | HAMMER FALL CASING 24" SAMPLER30" | | |
| - ນ | CASING BLOWS PER FCC1 | SAMPLE NUMBER | Sample Depins Elev - Feet | SAMPLE | 0.6 | BLOWS ON SA | | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILI CHANG DEPTH | FIELD IDENTIFICATION | | |
| _ U _ | | | 0'-2' | 14" | 3 | 3_ | 2 | 3 | | 0'- 2' | TOPSOIL (2"). RUSTY BROWN SILTY FINE SAND, ORGANIC | | |
| | | | 21-41 41-61 | 12" 6" | 4 | 5 | 20 | 5 25 | | | MATTER, TRACE GRAVEL. LOOSE. (SM) (11-65) | | |
| - 1a - | | SS4 SS5 | 6'-8' 8' | 6" NR | 25 100 | 30 | 31 | 32 | | 10' | RUSTY BROWN SILTY FINE SAND, TRACE T SOME GRAVEL. LOOSE TO 4', FROM 4' TO | | |
| | | R1 | 8'-13' | 45% | REC | BOU | LDE | RS | | | 12' DENSE TO VERY DENSE, (SM) (6-65) GREENISH GRAY SILT | | |
| | | | 14'-16' | 8" | 24 | 52 | 36 | 43 | | | F-C SAND, SOME TO LITTLE GRAVEL, COBBLES AND | | |
| 20 - | | | 18' | NR | .27 100 | 28 /0" | 34 BOU | LDE | RS | | BOULDERS. BOULDERS CORED FROM 8' TO 13'. VERY DENSE. TILL MATERIAL. | | |
| | S: | | 20'-22' 22'-24' | 8"2 | 6 39 | 35 43 | 38 55 | 77 | 1 | 22' | | | |
| | Si | 11 | 24'-26' | 12" | 67 | 79 | 85 | 91 | | 26, | F-M SAND WITH ROCK FRAGMENTS (GNEISS) MICA. VERY DENSE. POSSIBLE SAPROLITI SOIL (DECOMPOSED | | |
| -30 | | R2 | 26'-32' | | REC | | | | 1 | | ROCK) (SP-SM AND GP-GM) (6-65/5-65) GNEISS. MEDIUM GRA | | |
| | | _ | | 227 | ROI | | | | 1 | | FROM 26'TO 37', SOF TO MODERATELY HARC | | |
| - 40 | | | | | | | | | - - | | WEATHERED, OXIDIZED, FRACTURED FOLIATION FROM SUE HORIZONTAL TO 60 DEGREES. CLOSE | | |
| 2.51 | Soil Engineer:Oriller: GUS SURI | | | | | | | | | | | | |
| Orter | Orting Inspector: Helper: STEVEN LUEDDEKE | | | | | | | | | | | | |

JOB LOCATION.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEE! | 2 of 4 | |
|------------|----------------|--|
| LICATION | BRONX, NY | |
| HOLE NO _ | MG-827-99 | |
| LINE & STA | N: 323, 015.09 | |
| OFFSET | E: 524, 959.81 | |

| | L.9 | 9018 | | FOR: N | METCAL | F&EI | DY- | HAZE | N AN | D SAWY | ER | | |
|--------------------|---|--------|-----------|--------------------|---------------------|-------------------|-------|-----------------------|-----------------------------------|--------------------------------------|--------------------------|--|--|
|) PUH | | ! ! | I II CAS | ING OUI UI DAIL | DAIE | | DAI | : SIARI. E. FINISH | 2 | -3-99 -4-99 | Gr | GROUND ELEVATION 192.16 GROUND WATER ELEVATION 185.47 275/99 | |
| SAMP | G OD <u>HW</u> ER OD 2" ONO BIT SZE | | _ (D | | WEICHI INSIDE LI | OF HAM ENGIH (| MER _ | 30 PLER _ | HAMMER FALL CASING 24" SAMPLER30" | | | | |
| - 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DE | | SAMPLE | | ON SA | PER 6" MPLER | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFIT CHANG DEPTH | SE SELD IDENTIFICATION | |
| - 0 - 40 | | R3 | 32'-42' | | | REC ROD | | | | | | JOINT SPACING. (4-65/3-65) | |
| | | | | | | | | | | | | ROCK QUALITY IM- PROVES AT 37'. FRO 37' TO 42' ROCK IS MODERATELY WEATHERED, SOFT, CLOSELY JOINTED. | |
| – 10 – | | R4 | 42'-52' | | 98% 75% | REC ROD | | | | | | FROM 36.5' TO 37', A SUBVERTICAL FOLIATION JOINT, SMOOTH, CHLORITE, OPEN, SOFT, FRIABL | |
| 60 -20 - | | | | | | | | | | | | WTIH THREE 5 TO 10-DEGREE JOINTS ACROSS FOLIATION, ROUGH, CARBONATE COATING. FROM 39.5'TO 40.8 | |
| 6 | | RS | 52'-62' | | | REC RQD | | | | | | A 80-DEGREE FOLIATION JOINT, SMOOTH, TIGHT, WITH TWO JOINTS WITH FOLIATION TREND, ROUGH, OPEN. (3-65 | |
| 70 -30 | | | | | | | | | | | | FROM 42' TO 53.2' MODERATELY CLOSE JOINT SPACING, SLIGHTLY WEATHERE | |
| | | R6 | 62!-72! | | | REC | | | | | | TO UNWEATHERED. FOLIATION AT 30 TO 80 DEGREES. | |
| 80 -40 | | R7 | 72'-77' | | | REC | | | | | 771 | FROM 42' TO 43.2' AN 80-DEGREE FOLIATION JOINT, SMOOTH, OPEN, MIC | |
| Soā | Engineer: _ | | | • | <u> </u> | | Dr | Wer: _ | Gl | JS BUR | I | | |
| Orithi | g inspecto | r: | | | | | не | elper: _ | <u>s</u> | TEVEN I | LUEDI | DEKE | |

WGI Warren George Inc.

LOCATECT BRONX, NY
HOLE NO MG-827-99
LINE & SIZ NE 323, 015.09
OFFSET E: 624, 959.81

| | [| - | | TANK ISAL IS | | | Offset | | | | | |
|--|--|--------|---------------------|-----------------------------|----------------|------------------------------------|---------------------------|---|--|--|--|--|
| L-99018 | FOR: | METCA | LF&ED | DY-HAZE | N AN | D SAWY | ER | | | | | |
| OIPHI | I FI CASING OUI I ALI CASING OUI DAIL | DAIE | | DAIE, STARE, DAIE FINISH | | -3-99 -4 - 99 | | OUND ELE/ATION 192.16 OUND WATER ELEVATION 185.47 | | | | |
| CASING OD HW SAMPLER O.D 2" DIAMOND BIT SZE NO | _ 10 | | OF HAMI LENGIH O | MER 30 F SAMPLER | _ LB\$. IN. | HAMMER FALL CASING 24" SAMPLER 30" | | | | | | |
| CASING BLOWS BLOWS PER FCOI ST | SAMPLE DEPTHS ELEV - FEET | SAMPLE | | OLOWS PER 6 | | DENSITY OR CONSIST. | PROFILI CHANG CEPIH | FELD IDENTIFICATION | | | | |
| 0 | | ~ | 0 0 | 5 -12 12 - 18 | 18 - 24 | MOISTURE | LEPIM | | | | | |
| - 20 | | | | | | | | WITH THREE 10- DEGREE JOINTS (ONE WITH FOLIATION TREND AND TWO ACROSS FOLIATION). OPEN, ROUGH. FROM 47.7' TO 49', A 60-DEGREE FOLIATION JOINT, SMOOTH, OPEN, MICA, CHLORITE, SOFT, WITH A 10-DEGREE JOINT ACROSS FOLIATION ROUGH, OPEN. AT 51', A 60-DEGREE FOLIATION JOINT, SMOOTH, OPEN WITH A 20-DEGREE JOINT ACROSS FOLIATION, ROUGH, TIGHT. FROM 52' TO 53.2', FRACTURED WITH TWO FOLIATION JOINTS, SMOOTH, OPEN, AN 80-DEGREE JOINT ACROSS FOLIATION, ROUGH, TIGHT AND TWO 10-DEGREE JOINTS WITH FOLIATION TREND, ROUGH, OPEN. (2-65) BELOW 53.2', HARD, UNWEATHERED ROCK. FOLIATION AT 40 TO 60 DEGREES. | | | | |
| | | | | | | | | MODERATELY CLOSE TO | | | | |
| 40 | | | | | | | | WIDE JOINT SPACING. | | | | |
| Soil Engineer: Drilling Inspector: | Oriller: GOS GORT | | | | | | | | | | | |

WGI Warren George Inc.

| SHEE! | OF 4 | |
|-----------|----------------|---|
| OCATION_ | BRONX, NY | |
| HOLE NO _ | MG-B27-99 | - |
| INE & SIA | N: 323, 015.09 | • |
| OFFSEI | E: 624, 959.81 | |
| OFF 3E1 | | |

| _ | L.9 | 9018 | | FOR. | 1ETCA | LF&EI | DY- | -HAZE | N AN | D SAWY | ER | |
|----------------|-----------------------------------|--------|-------------------------|----------|--------|--------------------|--------|-------------------|------------|--------------------------------------|--------------------------|---|
| 11439 11430 | · | ! ! | L II CA L AIL CASING | SINC OUI | DAII | | DA | | 2 | -2-60 | Gt | COUND ELEVATION 192.16 COUND WATER ELEVATION 185,47 |
| SAMPI | GOD. HW EROD 2" DND BIT SVE | | _ I.D | | WEIGH | OF HAM LENGTH C | IMER . | 3CO | 0-14 24 | | LBS. #N. | HAMMER FALL CASING 24" SAMPLE 30" |
| - 0 - | CASING BLOWS PER FOOI | SAMPLE | SAMPLE C ELEV | | SAMPLE | 0·6 | ON SA | PER 6" | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFIL CHANG DEPIH | FIELD IDENTIFICATION |
| 10 | | | | | | | | | | | | AT 72' AND 73', 80 AND 70-DEGREE FOLIATION JOINTS RESPECTIVELY, SMOOTH, TIGHT, MICA. AT 73.8', A 60- DEGREE JOINT ACROS FOLIATION, ROUGH, TIGHT. AT 74.1', A 50- DEGREE FOLIATION JOINT, SMOOTH, MICA FROM 74.1'TO 74.6' AN 80-DEGREE JOINT WITH FOLIATION TREND, SMOOTH, TIGHT, IRREGULAR, MICA. AT 74.6' A 20- DEGREE JOINT ACROS FOLIATION, ROUGH, TIGHT. IN GENERAL GOOD ROCK, (1-65) |
| | | | | | | | | | | , | | |
| - 40 - | | | | | | | | | þ | | | |
| Soil 6 | ngineer: | | | | | | C-10 | | सः । | S SURI | <u> </u> | |
| Oriting | Oriller: GUS SURI Inspector: | | | | | | | | | | | |
| | | | | | | 10100 | | CONTRACTOR OF THE | | | | |

WGI Warren George Inc.

SIRET BRONX, OF V LOCATION BRONX, NY MG-B28-99 HOLE NO NI 323, 214.78 LINE & SIA E: 624, 983.06

L.99018

| 121 P.H 121 P.H | | 1 1 | I FI CASING OUI DATE | DAIŁ | | _ DAI | E. SIARI E. FINISI | , 2 | -3-99 -4-99 | GRO | OUND ELEVATION 188.28 SUND WATER FLEVATION 175.74 |
|-------------------------|-------------------------------------|--------------|----------------------------|--------|------------|------------------|-----------------------|-------------|-----------------------------|----------------------------|---|
| CASIN SAMPI DIAMO | C OD HW LER OD 2" OND 811 SZE | NQ | _ 1D | WEICHI | OF HAI | MMER . OF SAM | 30 PLER _ | 00-14 24 | | IRS | HAMMER FALL CASING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS FLE\ FCEI | SAMPLE | 0.0 | ON S | PER 6 | | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| -0- | | SSI | 0'-2' | 12" | | | | 18 - 24 | MOISTURE | 07- | TOPSOIL(4"). DARK |
| | | | 2'-4' | 14" | | 7 | _3 | 10 | 8 | 2' | GRAY SILTY SAND, DRGANIC MATTER. |
| | | S83 | 4'-6' | 12" | | 11 | 16 | 21. | | | BROWN SILTY FINE T |
| | | SS4 | 6'-8' | 12" | 32 | 16 | 14 | 17 | | | MEDIUM SAND, TRACE TO SOME GRAVEL, |
| -10 - | | <u>\$\$5</u> | 8'-10' | 11" | 12 | 17 | 20 | 23 | | | GRAVEL CONTENT TENDS TO INCREASE |
| | | SS6 | 10'-12' | 8" | 20 | 24 | 29 | 31 | | | BELOW 5'. MEDIUM DENSE TO DENSE FRO |
| | | | 12'-14' | 10" | | 29 | 32 | 38 | | 147 | 2' TO 11'. VERY DENSE BELOW 11'. (SM.SP-GM) (6-65) |
| | | | 14'-16' 16'-18' | | 30 | 37 | 49 | 100 /5" | | | YELLOW BROWN SILTY F-M SAND WITH MICA |
| -20 - | SS | | 18' -20' | 3" | | /5" | | | | | ROCK FRAGMENTS (GNEISS), COBBLES. |
| | SS | | 20'-21' | 2" | 100 100 | /4" /3" | | | 3 | 21' | PROBABLE BOULDERS. VERY DENSE. POSSIBLE SAPROLITI |
| | | | | | | | | | | | SOIL. (DECOMPOSED ROCK). (SM AND GM) |
| | | R1 | 21'-26' | 75% | REC RQD | | | | | | (6-65/5-65) |
| | | | | 00% | KGD | ρ | | | | | GNEISS. LIGHT GRAY SCHISTOSE, MODERATE |
| -30 - | | | | | | | | | | | LY HARD TO HARD, SLIGHTLY WEATHERED TO UNWEATHERED. |
| | | | | +- | | | | | 3 | | OXIDATION ON JOINT TO 30'. |
| | | R2 | 26'-36' | 98% | REC | | | | | * | FOLIATION AT 10 TO |
| | | | | | RQD | | | | | | 30 DEGREES FROM 21' TO 33'; AT 30 TO 50 DEGREE |
| 40 - | | | | | | | | | | | FROM 33' TO 56'; 50 TO 70 DEGREES |
| Soil E | ingineer: | · | | | | _ Drift | ler: | RE | YNOLDS | BRID | |
| Dritting | Inspector: | | | | | Hel | per: | AL | VRO LO | NDON | |

WGI Warren George Inc.

SUBSURFACE EXPLORATION

LOCATION BRONX, NY
HOLE NO MG-B28-99
UNE & SIA N: 323, 214.78
OFFSEI E: 524, 983.06

| | L.9 | 9018 | | FOR: M | TETCA | LF&E | DDY- | HAZE | N AN | ID SAWY | ER | |
|-------------|-----------------------------|--------|--------------|----------|--------------------|------------|-------|-----------------------------|-------|--------------------------------------|----------------------------|---|
| DEPIH | | ! | 1 II CA | SING OUI | —— DVII — | | _ DAI | ie. Siari ie. Finish | | -3-99 -4-99 | | DUND ELEVATION 188.28 DUND WATER ELEVATION 175.74 |
| SAMPLE | R OU. 2" | | | 3-0 | WEICHI INSIDE I | | | 30 4P1 ER | | | _ LBS | HADMMER FALL CASING 24" SAMPLER ³⁰ " |
| - 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE D | | SAMPLE | 9 0 | ON S | PER 6* AMPLER 12 · 18 | 18 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIFT D. IDENTITION |
| 40 | | | | | | | | | | | | BELOW 56'. CLOSE JOINT SPACIN |
| 50 -10 - | | R3 | 36'-46' | | | REC | | | | | | FROM 21' TO 30'. 10 TO 30-DEGREE FOLIATION JOINTS PREDOMINATE, AT 21', 22.8', SMOOTH FOLIATION JOINTS, TIGHT, MICA. (3-65) |
| s | | R4 | 46'-56' | | | REC ROD | | | | | | BELOW 30', MODERATELY CLOSE JOINT SPACING. AT 33' AND 34', SMOOTH FOLIATION JOINTS, TIGHT, MICA |
| 60 20 | | | | | | | | | | | | FROM 46.5'TO 46.8' A 60-DEGREE JOINT ACROSS FOLIATION, IRREGULAR, TIGHT, CHLORITE. |
| 70 | | R5 | 56'-66' | | | REC | | | | | 66' | FROM 55.6' TO 56', TWO 60-DEGREE FOLIATION JOINTS, SMOOTH, TIGHT,MICA FROM 56' TO 56.7', |
| -30 - | | | | | | | | | | | | FRACTURED ROCK, CHLORITE ALTERATION, SOFT, WITH FIVE SUB- HORIZONTAL JOINTS, |
| | | | | | | | | | | | | OPEN. POSSIBLE SHEARING. MODERATE LY JOINTED BELOW 57'. ROCK IS |
| 80 40 - | | | | | | | | | | 1 | | GENERALLY GOOD. (1-65/2-65) |
| Soil E | ngineer: | | | | - , <u>-</u> | | | Her: | | YNOLDS VRO LO | | PGPAL |

WGI Warren George Inc.

LOCATION BRONX, NY
HOLE NO MG-829-99
UNE & STA E: 625, 005.14

L.99018

| 114 KG 414 3CI | ! | | H CASING OUI DAIR | LOSE | <u>, 520</u> | DA | F SIADI | 3 | 10 SAWY 3-9-99 3-11-99 | GRO | OUND ELEVATION 181.72 |
|-------------------|-----------------------------|--------|------------------------------|------------|--------------|--------|---------|---------|------------------------------|----------------------------|---|
| CASIN | GOD HW | | 10 _1.0 | WEIGH | I OF HA | MMER . | 30 | 0-14 | ю | LBS. | HAMMER FALL CASING 24" SAMPLER 30" |
| - 0 - | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPIHS ELEV : FEET | SAMPLE | 0.6 | ON S | PER 6" | 18 . 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | CICI D. Income |
| | | | 0'-2' 2'-4' | 9" | 1 | 2 5 | 2 | 2 | | 0'- 4' | TOPSOIL (3"). DARK BROWN AND LIGHT BROWN SILTY FINE SAND. LOOSE TO MEDIUM DENSE. (SM) |
| - 10 - | | R1 | 4'-10' | 30% | REC | BOL | LDE | RS | | 10' | (7-65) SILTY SAND WITH COBBLES AND BOULDERS. (GM AND SM) (6-65) |
| | | R2 | 10'-15' | 95% 88% | REC ROD | | | | | | GNEISS. MEDIUM GRAY, HARD, SCHISTOSE FROM 25' TO 27.5', 42' TO 45'. FAINTLY WEATHERED TO UN- |
| 20 | | | | | | | | | | | WEATHERED. FOLIATION AT 40 TO 50 DEGREES. FOLIATION AT 70 DEGREES TO SUB- |
| | | R3 | 15' -25' | | REC ROD | | | | ٠ | | VERTICAL FROM 15' TO 17.5', 29.4' TO 31.2'. INDISTINCT FROM 31.2' TO 35'. OXIDATION ON JOINT TO 32', CLOSE TO |
| -30 - | | | | | | | | | | | MODERATELY CLOSE JOINT SPACING VER CLOSE SPACING FROM 31' TO 34'. |
| | | R3 | 25' –35' | | REC | | | | | | GOOD ROCK FROM 35' TO 40' AND BELOW 45'. FROM 15.5'TO 16.8' |
| 40 Soft 6 | ngineer: | | | | | | | To | KE HAB | | A SUBVERTICAL FOLIATION JOINT, |
| | Inspector: | | | | | - | oer: | | KE HAR VE HAR | - | |

WGI Warren George Inc.

SUBSURFACE EXPLORATION

LOCATION BRUNX, "NY
HOLE NO MG-B29-99
LINE & STA E: 625, 005. 14

L.99018

| DIFIN | | | I II CASING OUI DAIE. | | | DAI | E. FINISH | · | 3-9-99 3-11-99 | GI | ROUND ELEVATION 181.72 ROUND WATER ELEVATION 3/24/39 |
|-------------------------|-------------------------------------|----------------|---------------------------------------|--|-----------------|--|---------------|----------------|---------------------------|--------------------------|--|
| CASIN SAMPI DIAMK | COD HW LER O.D 2" DNO BII SZE | NQ | _ ID | WEIGHI INSIDE | OF HA LENGIH | MIMER _ OF SAM | 30 PLER _ | 0-14 24 | | _ LB\$ IN, | HAMMER FALL |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPIHS ELEV FEET | SAMPLE | | ON SA | PER 6 | | DENSITY OR CONSIST. | PROFIL CHANG DEPTI | GE FIELD IDENTIFICATION |
| - o - | | | | ~ | 0.6 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | OEPI | 7 |
| 40 | | | | <u> </u> | | | | | | ļ | IRREGULAR, OXIDIZEL TIGHT, ROUGH, AT |
| | <u> </u> | | | | | | | | | | 17.7' AND 18.9'. |
| | | | 35'-45' | | | | | | | | TWO 60-DEGREE |
| | | <u> </u> | 33' -43' | 98% | | | | _ | | | JOINTS ACROSS |
| ĺ | | | | 00/ | RQE | | - | | | | FOLIATION, OXIDIZED ROUGH, OPEN. |
| | <u> </u> | | | | | | | | | i | ROUGH, UPEN. |
| 50 | | | | - | | | | | | | FROM 30.7'TO 31.9' |
| - 10 - | | | | | - | | | | | | A SUBVERTICAL |
| i | | | | 1 | | | | _ | 1 | | JOINT, CURVED, IRREGULAR, OXIDIZED |
| | | | | | | | | | | | ROUGH, OPEN, |
| 1 | | - DC | usi ser | 1 | | | | | | | CARBONATE COATING |
| | — | K6 | 45'-55' | | REC | | | | | | WITH A 10-DEGREE |
| | | | | 807 | KEL | | <u> </u> | | ł | ¥ | JOINT ACROSS |
| | | | | | | | | | | 1 | FOLIATION, OPEN. FROM 31.9'TO 33.3' |
| 60 | | - | | | | | | |] | 1 | FRACTURED ZONE |
| - 20 - | + | 1 | | ┼ | | | <u> </u> | | | | ALONG FOLIATION, |
| | | | | 1 | - | district of | | | - | | SOFT AND FRIABLE, |
| | | | | | | | | | | | WITH CHLORITIC AL TERATION, CARBONAT |
| | | D= | 551 551 | 1 | | | | | - | 1 | COATING. POSSIBLE |
| ŀ | | K/ | <u> 55' –65'</u> | 987 | | | <u> </u> | | Į | 65 | ' SHEAR ZONE. |
| | | | | 39/ | RQI | | | - | 1 | ŀ | AT 431 A 55 PEOPE |
| | | | | | | | | | 1 | | AT 42', A 50-DEGRE |
| 70 | | | | - | | | | |] | | FOLIATION, SMOOTH, |
| -30 · | + | - | | - | | | | |] | | TIGHT. |
| 1 | | <u> </u> | | + | | - | <u> </u> | | 4 | 1 | FROM 42.4' TO 45', |
| l | | | | | | | | | † | | SEVEN FOLIATION JOINTS AT 40 |
| | <u> </u> | | | | | | | | j | | DEGREES, SMOOTH, |
| | | - | | ┿ | | | | | | | AND ONE SUB- |
| 1 | | | | ┼ | | | | | 4 | | HORIZONTAL JOINTS, |
| | | | · · · · · · · · · · · · · · · · · · · | | | | | | 1 . | | ROUGH, TIGHT. |
| ļ | | | | | - | | | | † | ļ | 1 |
| 40 | ┸ | <u> </u> | 1 | ــــــــــــــــــــــــــــــــــــــ | | | N: 500 | | 1 | 1 | |
| Soil | Engineer: _ | | - | | | Ori | ller: | J£ | AKE HAI | RIS | |
| Drittin | ng inspector | : | | | | **- | | DA | AVE HA | RIS | |
| 120 | | | | | | He | iper: | | | | |

Warren George Inc. SUBSURFACE EXPLORATION

LOCATION BRONX, NY
HOLE NO MG-829-99
UNE & SIA N: 323, 392.71
OFFSET E: 625, 005.14

| | | aota - | | FOR: | 1ETCA | ILF&E | DDY- | HAZE | N AN | D SAWY | ER | |
|--------------------------|-------------------------------------|--------|----------------------------|----------|--------|-------------------|------------------|-----------------------|------------|---------------------------------------|----------------------------|--|
| ОГРИ | | f | I HI ÇA I. ALL CASING (| Oni DVIF | DAIE | | _ DAI | E START. E. FINISH | 3 | -9-99 -11-99 | GRO | UND ELEVATION 181.72 LIND WATER ELEVATION 177.85 3124199 |
| C ASIN SAMPL DIAMC | S OD HW ER OD 2" DND 811 SIZE | NQ | _ ID | | WEIGHI | i of Ha Lengih | MMER _ OF SAM | 30 PLER _ | 0~14 24 | 0 | _ LBS. IN. C | HAMMED FALL CASING 24" SAMPLER30" |
| - 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE C | | SAMPLE | 0.6 | ON \$4 | PER 6 | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| 10 20 | | | | | | | | | | | | FROM 47.4' TO 47.15', TWO 60- DEGREE FOLIATION JOINTS, SMOOTH, TIGHT. FROM 50' TO 50.5', A 70-DEGREE JOINT, SMOOTH, ALTERATION IN EPIDOTE. FROM 50.75'TO 51.3' THREE FOLIATION JOINTS, ROUGH, TIGHT, ALTERATION IN EPIDOTE. (2-65) END OF HOLE 65' ORIENTED CORE FROM 45' TO 65'. WATER PRESSURE TESTS IN ROCK FROM 15' TO 65'. |
| 30 | | | | | | | | | | | | PIEZOMETER INSTALLED AT 55'. |
| Soll 6 | ingineer: | · | | | | | Del | ller: | JA | KE HAR | RIS | |
| Dritting | Inspector: | | | | | | He | | | VE HAR | | |
| | 100 | | | | | | | | | | | 10 10 10 10 10 10 10 10 10 10 10 10 10 1 |

WGI Warren George Inc.

LOCATION BRONX, NY
HOLE NO MG-830-99
LINE & STA N: 322, 855.71
E1 625, 040.79

| | L.9 | 901B | | FOR: M | ETCA | LF&E | DDY- | HAZE | N AN | ID SAWY | | #FET |
|------------|-------------------------------|-------------|------------------|----------|----------|----------------------------|----------|----------|----------|--------------------------------------|----------------------------|--|
| Utrin . | | ! | I II CA | SING OUT | 13016 | | DAI | | 2 | -17-99 24-99 | GRO | UND ELEVATION 193.87 UND WATER ELEVATION 175.32 |
| SAMPLER | OD HW 2 OD 2" D BII SUE | | _ 10 | | | | MMER _ | | | 0 | _ LBS. IN. (| 1/24/99 HAMMER FALL CASING 24" SAMPLER 30" |
| | Casing Blows Per foci | SAMPLE | SAMPLE D | | SAMPLE | 0-6 | ON SA | PER 6 | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | EIELO SOCKIONIA |
| - | | SS1 | 0'-2' | | 16" | | 3 | 2 | 2 | | 0'- 2' | TOPSOIL(2"). DARK BROWN SILTY SAND, |
| | | | 2'-4' | | 20" | 6 | 5_ | 5 | 7 | | | ORGANIC MATTER. LOOSE, (SM) (11-65) |
| - | | | 4'-6' 6'-8' | | 6" 8" | 10 | 20 | 22 | 19. | | | RUSTY BROWN SILTY F-M SAND, TRACE TO |
| - 10 - | | | B'-10' | | 8" | 10 | 24 13 | 26 14 | 21 16 | | | SOME GRAVEL. MEDIU DENSE TO DENSE. (SM,SP-SM) (6-65) |
| | | | | | | | | _ | | | | |
| | | | | | | | | | | 33 0 | | |
| | | SS6 | 16'3"-18 | 3'3" | 5" | 24 | 26 | 31 | 45 | | 16' | BROWN GRAY SILTY SAND, TRACE TO SOM |
| -20 | | R1 | 18' 3"-20 |), | 8% | REC | BOU | LDE | RS | | o o | GRAVEL, COBBLES. BOULDERS. VERY DENSE. POSSIBLE |
| | | | | | | | | | | | | TILL MATERIAL. (SM AND GM) |
| - | | | | | | | | | | | | (6-65/5-65) |
| | | | | | | | | | | | | |
| -30 + | | _RZ | 20'-30.5 | | | - | BOU | LDE | RS | | 30.5 | GNEISS. LIGHT GRAY |
| F | | R3 | 30.5*-35 | | CARA | F F F F F F F F F F | | | | | | HARD. QUARTZITIC FROM 31' TO 33'; 47' TO 48'; 67'TO |
| F | | | | | | REC | | | | | | 71.5'. FAINTLY WEATHERED TO UN- WEATHERED.FOLIATIO |
| 40 | | R4 | 35'-40' | | | REC ROD | | | | | | MOSTLY SUBVERTICAL AT 60 DEGREES FROM 46' TO 49'. |
| Soil Engi | ineer: | | | | | | | er: | JAI | KE HARI | RIS | 1.79 10 497, |
| Drilling t | Inspector: | | | | | | . Help | Der: | DA | VE HAR | RIS | |

Warren George Inc. SUBSURFACE EXPLORATION

SIRE! COF 3

LOCALIGIT BRONX, NY

HOLE NO MG-B30-99

LINE & SIA N: 322, 855.71

OFFSI E: 625, 040.79

| | L. 3 | 3018 | | FOR: | 1ETCAL | _F&EI | DDY- | HAZE | en an | D SAWY | ER | |
|-------------|------------------------------------|--------|----------|----------|------------|----------|----------------|---------------|----------|-----------------------------|----------------------------|---|
| DEP18 | | l | I H. C/ | OUI DAIF | DAII _ | | DAII | SIAR FINIS | | -17-99 -24-99 | | DUND ELEVATION 193.87 DUND WATER ELEVATION 176.32 |
| SAMP | G OD HW ER O.D 2" DNO BU SUE | | _ ID | | | | | | 24 24 | 100 | _ t85 IN. | HAMMER FALL CASING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE (| | SAMPLE | 0.6 | BLOWS ON SA | MPLER | | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | CICID MENTION AND |
| - 0 - 40 | | | | | | | 0.12 | 12 (8 | 16 - 24 | INGISIONE | | DXIDATION ON JOINT |
| 70 | _ | | | | | | | _ | <u> </u> | | | TO 41'. FROM 30.5' TO 35', |
| | | R5 | 40'-45. | 5' | 100 82% | % RQD | REC | | | | | JOINTS ACROSS FOLIATION PREDOMINATE. FROM 35' TO 40', 30- |
| 10 | | R6 | 45.5'-4 | 9.5′ | 100 | % RQD | REC | | | | | DEGREE JOINTS WITH FOLIATION TREND PRODOMINATE, VERY |
| | | | | | | | | | | | | CLOSE TO CLOSE JOINT SPACING. FRACTURED FROM |
| | | | | | | | | | | | | 38.3' TO 40', SMOOTH JOINTS. (3-65) |
| 60 | | R7 | 49.51-5 | 9.5' | 100 | 74 | REC | | | | | GENERALLY GOOD ROO BELOW 40' WITH CLOSE TO MODERATE |
| - 20 - | | | | | 84% | RQD | | | | | | CLOSE JOINT SPACING, EXCEPT FROM 45' TO 49' |
| | | | | | | | | | | | | WHERE THE ROCK IS VERY CLOSELY |
| | | | | | | | | | | | | JOINTED. A SUB- VERTICAL FOLIATION JOINT FROM 47' TO |
| 70 -30 | | RB | 59.57-6 | 91 | 100 | χ ROD | REC | | | | | 49.5',ROUGH, PITTE CORE SURFACE. FROM 53.7' TO 54.2', A |
| | | | | | - | | | | | 1 | | JOINT, SMOOTH. BELOW 69', ONLY A |
| | | R9 | 69' -75' | | | REC | | | | | 751 | FEW SUBHORIZONTAL JOINTS, ROUGH, |
| | | | | | 376 | KUD | _ | | | | | END OF HOLE 75' |
| 80 -40 | | | | | | | | | | 1 | | ENA OF HOLE 19 |
| Soil | Engineer: _ | | | | | | Dri | Der: _ | J | AKE HAI | RIS | |
| Drijer | g Inspector | · | · | | | | He | iper: _ | De | YE HAI | RIS | |

Warren George Inc. SUBSURFACE EXPLORATION

LOCATION BRONX, OF NY
HOLE NO MG-B30-99
LINE & SIA E: 625, 040.79 SHEET -

. 7

| - | L.9 | 9018 | | FOR: | IETCAI | _F&EI | -Y00 | HAZE | N ANI | D SAWYI | ER | | |
|---------------|-----------------------------|--------|-------------|-----------|--------------------|-------------------|------------------|--------------|------------|--------------------------------------|--------------------------|----------|--|
| otem otem | | I | I II CA | ASING OUI | DAIE· | | DAII | SIARI. | . 2 | -17 -9 9 -24-99 | Gr | ROUND | REVAIION 193.87 WATER ELEVATION 176.32 |
| SAMP | ER OD Z" | | _ 10 | | WEIGHT INSIDE L | of haf Engih (| MMER _ OF SAM | 30 PLER _ | 0-14 24 | 0 | LBS IN | CASIN | HAMMER FAIL G 24" SAMPLER 30" |
| 1000 | CASING BLOWS PER FOOI | SAMPLE | SAMPLE (| | SAMPLE | V-8 | ON SA | PER 6' | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFIL CHANG DEPTI | GE | HELD IDENTIFICATION OF SOIL |
| - o - | | | | | | | | | | | | 3 | RIENTED CORE FROM |
| | | | | | | | | | , | | | 1 | IATER PRESSURE ESTS IN ROCK FROM 10 75'. |
| - 10 - | | | | | | | | | | | | 1 | WO PIEZOMÉTERS INSTALLED AT 32' AND 70'. |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| -20 | | | | | | | | | | <u> </u> | | | |
| | | | | | | _ | | | | | | | |
| | | | | - | | | | | | 1 | | | |
| -30 | | | | | | | | _ | | | | | |
| | | | | | | | | | | - - - | | | |
| | | | | - | | | | | | 1 | | | |
| -40 | | 1 | | | | | <u> </u> | | | <u> 1</u> | | | |
| Soit | Engineer: | | | | | | 0 | riller: _ | J | AKE HA | RRIS | <u> </u> | |
| Dritt | ing Inspect | or: | | | | | . н | elper: _ | D | AVE HA | RRIS | 1 | |

WGI Warren George Inc.

SHEET BRONX, OF LOCATION BRONX, NY
LOCATION MG-B31-99
HOLE NO N: 323, 103, 27
OFFSET E: 625, 070. 95

| | L.9 | 9018 | | FOR: | METCAL | F&ED | ו–ץם(| HAZEN | ANI | D SAWYE | ER | | |
|--------------------------|-------------------------------------|--------|-------------------|---------------------------------------|------------------|-----------|-------------------|---------------------|------------|---------------------------------------|-----------------------|----------|--|
| DI PIH | . | 11 | ALI CASING | OUI DAIL | | | | . SIARI . FINISH | | -1-99 -2-99 | _ G | KOUND WA | 188.34 LIER ELEVATION 172.93 2/5/99 |
| CASING SAMPU DIAMO | 3 OD HW ER O.D 2" 2ND 811 92E | NO | . 10 | | WEIGHT INSIDE LE | OF HAM | IMER _ OF SAMI | 300 PLER | 0-14 24 | 0 | . LBS IN. | CASING | HAMMER FALL 24" SAMPLER30" |
| | CASING BLOWS PER FOCI | SAMPLE | SAMPLE (LEV : | | SAMPLE | | | PER 6. MPLER | 18 - 24 | DENSITY OR CONSIST, MOISTURE | PROFI CHAN GEPI | GE | RELD IDENTIFICATION OF SOIL |
| - o - | | SSI | 0'-2' | | 12" | | 5 | 5 | 4 | | 0'- 2' | | PSDIL(4"). DARK OWN SILTY SAND, |
| | | 5S2 | 2'-4' | | 10" | 12 | 10 | 9 | 6 | | | La | ORGANIC MATTER. LOOSE.(SM) (11-65) RUSTY BROWN SILTY |
| | | _ \$53 | 4'-6' | | 12" | 13 | 11 | 6 | 11. | 1 | 6' | FI | NE SAND, TRACE RAVEL. MEDIUM |
| | | | 6'-8' | | 14" | | 20 | 20 | 23 | | <u> </u> | GF | NSE. (SM) (7-65) REENISH GRAY SILT |
| – to - | | | B'-10' 10'-10. | 5' | 12" 2" | | 21 /2" | WAS | 47 H | | ĺ | CC | AND, SOME TO ETTLE GRAVEL, DBBLES. DENSE TO |
| | | | | | | | | | | | | MA | ERY DENSE. TILL ATERIAL. AP-SM AND GP-GM) A-65) |
| | | | | | - | | | | | 1 | | | 3 307 |
| 20 | + | R1 | 10.5'- | 20.5' | 28% | REC | | | | - | 20 | .5' GI | NEISS. MEDIUM |
| | | | | | | | | | | | | M | RAY, HARD, ODERATELY EATHERED, OXIDIZE |
| | | | | | | | | | | | | F | N JOINTS TO 61.5' OLIATION AT 30 O 60 DEGREES TO |
| | | P2 | 20.57- | 20. 54 | 997 | REC | | | 1 | - | ļ | D | 1'; 60 TO 70 EGREES FROM 31' T 5'; |
| 30 | | | | | | RQI | | | | | | 1 | NDISTINCT BELOW |
| | | | | · · · · · · · · · · · · · · · · · · · | | | | | | | | · c | CLOSE TO MODERATEL CLOSE JOINT SPACIN |
| | | | <u> </u> | | | + | | | | - | | 8 | 'ROM 20.5'TO 40.5' SUBHORIZONTAL JOINTS PREDOMINATE |
| - 4 | . = | R3 | 30.57 | -40.5 | | REI RO | | | |] | | F | RACTURED FROM 20.5' TO 22.5'. A |
| Soil Engineer: | | | | | | | { | Driller: _ | F | REYNOLI | os B | RIDGP | AL |
| DH | lling inspec | tor | <u> </u> | | | | <u> </u> | Helper: | | ALVRO I | OND | ON | |

AND EXCENSION.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc.

SUBSURPACE EXPLORATION

| SHEET | 2 2 |
|------------|-----------------|
| LOCATION | BRONX, ONY |
| HOLE NO _ | MG-831-99 |
| LINE & STA | N: 323, 103, 27 |
| Offset | E:625,070.95 |
| | |

L.99018

| 136 PH 136 PH | · | | EL ALI CASING OUI DAIF | | | _ DAI | e, siari e, finisi | 2 | -1-99 -2-99 | | OUND ELEVATION 188.34 OUND WATER ELEVATION 172.93 |
|-----------------------|---------------------------------|--------------------|---|-------------|-------------------|-------|-----------------------|------------|---|-------------------|--|
| CASIN SAMP DIAM | GOUHW LERODZ" OND BIT SZE | NQ | _ ID | | I OF HA LENGIH | | | 0-14 24 | | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOI | LOWS SAMPLE DEPTHS | | | | ON 5/ | PER 6 | | DENSITY OR CONSIST | PROFILE CHANGI | FIELD IDENTIFICATION OF SOIL |
| - 0 - | | | | SAMPLE | 0 6 | 6 12 | 12 - 18 | 18 - 24 | MOISTURE | DEPIH | 3 304 |
| 40 | | | | | | | | | | | VERTICAL JOINT FRO 37.7' TO 40.5', OXIDIZED, ROUGH, WITH SIX 5-DEGREE JOINTS, OXIDIZED, ROUGH, TIGHT. (2-65 |
| | | | | | ida d | | | | | | 1 |
| 50 - 10 - | | R4 | 40.5'~50.5' | | REC | | | | | | QUARTZITIC GNEISS FROM 40.5' TO 43' AND FROM 51' TO 59.5'. |
| | | | | | | | | | | v I | BELOW 40.5' HARD |
| | | | | - | | | | | | 1 | WEATHERED, MODERATELY CLOSE JOINT SPACING. SUI |
| 60 | | | ļ — — — — — — — — — — — — — — — — — — — | | | | | | | | HORIZONTAL JOINTS PREDOMINATE BELOW |
| -20 - | | R6 | 50.5'-60.5' | | REC RQD | | | | • | | 50.5'. FROM 43.2'TO 43.7' AND 44.2' TO 44.7' |
| | | | | | | | | | 20 | | TWO 60-DEGREE JOINTS ACROSS FOLIATION, ROUGH, |
| | | | | | | | | | 25 20 20 20 20 20 20 20 20 20 20 20 20 20 | | OXIDIZED, TIGHT. FROM 58.7'TO 59.7' |
| 70 | <u> </u> | | | | | | | | | 1 | A 70-DEGREE FOLIATION JOINT, |
| - 30 - | | R6 | 60.5'-70.5' | | REC RQD | | | | | ! ! | SMOOTH, TIGHT, COATED WITH |
| | | | | | | | | | | | CARBONATE, WITH THREE SUBHORIZONTA JOINTS, OXIDIZED, |
| | | R7 | 70,51-75.51 | | REC RQD | | | | | 75. | ROUGH. GENERALLY |
| 80 | | | | | | | | | | | END OF HOLE 75.5' |
| -40 - | <u> </u> | l | | | | | | | | <u> </u> | |
| Soil E | ingineer | | | | | Drill | ler: | RE | YNDLDS | BRI | DGPAL |
| OriBing | Inspector: | | | | <u> </u> | Hel | per: | AL | VRO LO | NDON | |

OU TOURINGS.

WGI Warren George Inc.

SUBSURFACE EXPLORATION

L.99018

| | | | | -0 | | | | | | | |
|---------------|-------------------------------------|---------------|----------------------------|--------------------|------------------|----------------|----------------------|------------|---------------------------------------|--------------------------|---|
| ભાવ 10 | | t | L ALL CASING OUT DATE | DAIC | | DAIE | . START. . FINISH | ~ | -3-99 - 4-9 9 | GR | OUND ELEVATION 180.87 OUND WATER ELEVATION 176.33 |
| SAMPL | S OD HW ER OD 2" IND BII SIZE | 10.00 | _ I.D | WEIGHT INSIDE L | OF HAN | AMER _ | 30 ur _ | 0-14 24 | 0 | | HAMMER FALL CASING 24" SAMPLER 30" |
| - 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV FEET | SAMPLE | 0.6 | BLOWS ON SA | MPLER | 18 24 | DENSITY OR CONSIST. MOISTURE | PROFIL CHANG DEPIH | FIELD IDENTIFICATION |
| - 0 - | | | 0'-2' | 18" | 4_ | 3 | 2 | 2 | | 0'- 2' | DARK BROWN SILTY SAND, SOME GRAVEL, ORGANIC MATTER. |
| | | SS2 | 2'-4' | 14" | 2 | 4 | 6 | 7 | an an | | (SM) (11-65) |
| | | | 41-61 | 15" | 5 | 7 | 7 | 9 | | | BROWN SILTY FINE |
| | | 554 | 6' -8' | 8" | 12 | 16 | 19 | 22 | į | | SAND WITH SAND SIL INTERLAYERS. |
| 10 | | SS5 | 8'-10' | NRS | 2 | 33 | 39 | 20 | | 10' | |
| | | SSE | 10'-12' | 11" | 9 | 11 | 12 | 13 | | | MEDIUM DENSE TO VERY DENSE. |
| | | SS7 | 12'-14' | 12" | 14 | 19 | 38 | 42 | | 451 | (SM) (6-65) RUSTY BROWN SILTY |
| 100 | | | | | | | | | | 15' | GRAVEL, MICA, ROCK FRAGMENTS. DENSE TO VERY DENSE. |
| – 20 – | | | | | | | | | | | POSSIBLE SAPROLITI SOIL (DECOMPOSED ROCK). (SM AND GM) (6-65) |
| | <u> </u> | — | 15' -25' | 100 | | | | | | | GNEISS. MEDIUM |
| | | - KA | 13: -23, | 100 | 7 <u>,</u> 7. | REC | | | - | E | GRAY, HARD. FOLIATION AT SO TO 60 DEGREES, SUB- |
| | | | | | | | | |] | | VERTICAL FROM 15' TO 22' AND BELOW |
| -30 - | | | | | | | | | | | 45'. FAINTLY WEATHERED. |
| | | | | | | | | | 1 | | TO 16.5'. |
| | | R2 | 25' -35' | | % RQD | REC | | ļ | 1 | | CLOSE TO MODERATEL |
| | | | | | KWL | | | | | | SPACING FROM 30.5 TO 36'. MODERATELY CLOSE SPACING |
| -40 | | | | | | | | <u> </u> | 1 | | BELOW 36'. |
| Soit I | Engineer: _ | | | | -3-11-3 | Dri | ller: | | | | |
| Drain | g Inspector | : | | | | Не | lper: _ | | | , | |
| | | | | | | | | | | | |

LACO COCATON

. . .

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED 543

Warren George Inc.

SUBSURFACE EXPLORATION

SHEET 2 2
LOCATION BRONX, NY
LOCATION MG-B32-99
HOLE NO N: 323, 378.75
LINE & STA E: 625, 106.97

| | L.9 | 9018 | FOR: | METCA | _F&E | -צמם | HAZE | N AN | D SAWY | ER | |
|---------------------------------|--------------------------------------|------------------|--------------------------|--------------------|-------|----------------|-----------|------------|---------------------------------------|---------------------------|---|
| DEPIH DEPIH | | [] | H CASING OULDA | IE | | DAIE | . START. | 3 | -3-99 -4-99 | GRO | DUND ELEVATION 180.87 DUND WATER ELEVATION 716.33 |
| SAMPL | 3 00 HW ER 0.0 2" NNO BIT SIZE | | _10 | WEIGHT INSIDE (| | | | 0-14 24 | | . LBS. | HAMMER FALL CASING 24" SAMPLER 30" |
| - 0 | CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE DEPIHS ELEV FEEI | SAMPLE | 0 · 6 | BLOWS ON SA | MIPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANG DEPIH | FIELD IDENTIFICATION |
| 50 -10 - 70 -30 -40 | | R4 | 35'-45' 45'-55' | 98% | 7. | REC | | | | 60' | AT 15.8', A 60- DEGREE FOLIATION JOINT, SLIGHTLY OXIDIZED, SMOOTH, OPEN. AT 16.5', A 70- DEGREE JOINT ACROSS FOLIATION, OXIDIZED, SMOOTH, TIGHT. AT 33' AND 34', TWC 60-DEGREE JOINTS WITH FOLIATION TREND, SMOOTH, OPEN, CHLORITE AL- TERATION. FROM 33.5'TO 33.75' SOFT, FRIABLE ZONE, ALTERATION IN EPIDOTE. POSSIBLE SHEAR ZONE. AT 34.2', A 40- DEGREE JOINT ACROSS FOLIATION, SMOOTH, JOINT, OPEN. FROM 36.3' TO 37.75', AN 80-DE- GREE JOINT ACROSS FOLIATION, ROUGH, OPEN, ALTERATION CHLORITE, (1-65) END OF HOLE 60' |
| | Engineer: | | | | | | riller: | | | | |
| | | | | | | | - Jours - | 5000 | | | |

WGI Warren George Inc.

| SHEET | or |
|------------|--------------|
| LOCATION_ | DOONIN AND |
| HOLE NO. | MG-B33-99 |
| LINE & STA | N:323,679.09 |
| Decect | E:625,141.00 |

| | L.9 | 9018 | | FOR: | METCAI | _F&EI | -צמס | HAZE | N AN | D SAWY | ER | |
|--------|-------------------------------------|----------|--------------------|-------------------|--------------------|------------|--------------------|---|--------------|--------------------------------------|---|---|
| | | | FI CA | | | | | | | -25-99 -25-99 | GROU | IND ELEVATION 173.13 IND WATER ELEVATION 169.47 2126 99 |
| SAMPL | S OD HW ER OD 2" IND BIT SIZE | | WEIGHT INSIDE L | OF HAN ENGIH (| AMER OF SAME | 30 PLER | _ LBS IN. C | HAMMER FALL CASING 24" SAMPLER30" | | | | |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE ELEV : | | SAMPLE RECOVERY | 0.6 | BLOWS ON SA | *************************************** | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD EDENTIFICATION OF SOIL |
| - 0 - | | | | | н | | | | | | 07- | ASPHALT(4"). FILL |
| | | SS1 | 1'-3' | | 18" | 24 | 21 | 14 | 50 | | 0.3' 3' | MATERIAL. DARK GRAY SILTY SAND, TRACE GRAVEL. DENSE. |
| i | | S52 | 3'-5' | | 24" | 49 | 10 | 19 | 27 | | l | (SM) (7-65) |
| | | 553 | 5'-7' | | 24" | ı | 2 | 3_ | 5 | | 5' | LIGHT GRAY F-M SAND, TRACE GRAVEL. DENSE. FILL |
| | | 554 | 7'-9' | | 24" | 3 | 4 | 7 | 8 | 1 | ļ | MATERIAL. (SP) (6-65) |
| - 10 - | | SS | 9'-11' | | 12" | 16 | 22 | 8 | 5_ | | | GREENISH GRAY SILTY SAND, TRACE TO SOME GRAVEL TO 9', |
| | | | | | +- | | | | | | 15' | LITTLE GRAVELLY BELOW 9'. LOOSE TO MEDIUM DENSE. |
| | | SSE | 15'-17 | | 12" | 14 | 13 | 21 | 19 | | | POSSIBLE TILL MATERIAL. |
| - 20 - | | | | | | | | | | 20, | (SM AND GM) (6-65) DARK BROWN SILTY FINE MEDIUM SAND, | |
| | | <u> </u> | | | - | | | | | | | MICA, ROCK FRAG- MENTS. DENSE. POSSIBLE SAPROLITIC |
| | | R1 | 20' -25 | , | | 7, | REC | | | | | SOIL (DECOMPOSED ROCK). (SM AND GM) |
| | | | | | 757 | RQI | | - | - | 1 | - | (6-65) GNEISS. MEDIUM GRAY. MODERATELY |
| - 30 | | R2 | 251-30 | , | | 7 | REC | | | | | HARD. FOLIATION AT 50 TO 70 DEGREES. |
| | | | | | 837 | ROI | - | | | | | FOLIATION JOINTS PREDOMINATE. MODERATELY CLOSE TO |
| | | | | | | | | | |] | | CLOSE JOINT SPACING ON TOP 4 FEET. |
| | | | | | + | - | \vdash | | +- | - | | |
| | · | | | | | | <u> </u> | | 1 - | 7 | | |
| Soil | | 1 | | | 1 | | <u>'</u> | riller- | | | | |
| 1 | | | | | | | | | | | | |
| 1 | 10 00 000 00 | | | | | | | | | | | |

poor tochion

WGI Warren George Inc.

| SHEE! | OF |
|------------|-----------------|
| LOCATION_ | BRUNX, OF NY |
| HOLE NO. | MG-833-99 |
| | N: 323, 679, 09 |
| LINE & STA | E:625,141.00 |
| OFFSET | |

| | L.99 | 9018 | | FOR: | 1ETCAL | _F&EI | -ץמכ | HAZEN | I ANI | O SAWYI | ER | |
|-------------|-----------------------------------|--------|--------------------|---------------------------|---|-------|------------|---|-------------------|--|----------------------------|--|
| | | | | | DATE. SIART 2-25-99 GROUND ELEVATION 173.13 DATE. FINISH 2-25-99 GROUND WATER ELEVATION 169. 2124 | | | | | | | ND ELEVATION 173.13 ND WATER ELEVATION 169.47 2126/59 |
| WPL | GOD HW ER OD 2" IND BI SIZE | | WEIGHI INSIDE L | of Han Engih (| AMER _ OF SAME | | 0-14 24 | = | . LBS IN. C. | HAMMER FALL CASING 24" SAMPLEP ³⁰ " | | |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE ELEV | AMPLE DEPTHS ELEV + FEET | SAMPLE | 0.0 | ON SA | BLOWS PER 6" ON SAMPLER 6 - 12 12 - 18 18 - | | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| 0 - | | | | | | | | | | | | AT 21.75' AND 22', TWO 50-DEGREE FOLIATION JOINTS, SMOOTH, TIGHT. FROM 28.8'TO 29.25', A 70-DEGREE |
| - 16 - | | | | | | | | | | | | FOLIATION JOINT, ROUGH, TIGHT, SOME CHLORITIC ALTERATION. (2-65) |
| | | | | | | | | | | - - - - - | | END OF HOLE 30' |
| - 20 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| -30 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| So | i Engineer: | | | | | | | Driller: | | | | |
| Dr | illing Inspec | tor: | | | | | 1 | Helper: | | | | |

Warren George Inc. SUBSURFACE EXPLORATION

1.99018

| MIPL | ROD HW ROD 2" | | 1D | | OF HAM ENGIH O | I IMER _ IF SAMI | rer | | | LBS. | HAMMER FALL CASING SAMPLER |
|----------|-----------------------------|--------|---------------|--------|-------------------|------------------------|-----|---------|---------------------------------------|----------------------------|---|
| | Casing Blows Per fooi | SAMPLE | SAMPLE DEPIRS | | | BLOWS ON SA | | | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| 0 - | | | | SAMPLE | | | | 10 - 24 | | | ANGLED BOREHOLE DIRECTION: N 8 DEGREES E ANGLE: 60 DEGREES |
| 0 – | | | | | | | | | | | ROLLER BIT TO TOP OF ROCK |
| <u> </u> | | | | | | | | | · | | NOTE: ALL DEPTHS SHOWN AS "DOWN-HOLE" OR NON-VERTICAL |
| 30 - | | | | | | | | | | 26' | GNEISS. MEDIUM GRAY, MODERATELY WEATHERED, MODERATELY HARD |
| | | Ri | 26.2'-32' | 99% | REC ROD | | | | | | HARD TO 37'. FOLIATION AT 50 85 DEGREES. OXIDATION ON JOINTO 100'. |
| 40 | | | | | | | | | | | CLOSE TO MODERATI CLOSE JOINT SPAC TO 40.3'. |

LAND COUNTRY IN

. . .

WGI Warren George Inc.

SHEET 2 3

LOCATION BRUNX, NY

HOLE NO MG-B34-99

UNE & STA E: 625, 136.85

| | L.9 | 901B | | FOR: 1 | 1ETCAL | _F&EI | -Yac | HAZE | N AN | D SAWY | ER | |
|----------------|-------------------------------------|--------|--------------------------|----------------------|-------------------|------------|--------|-----------------|---------|------------------------------|-----------------------|--|
| OLPIH DLPIH | | I | I H CA I All CASING I | SING OUI OUI DAIE | DAII | | DAII | SIARI FINISH | | -9-99 -10-99 | | ROUND ELEVATION 187.81 |
| SAMPL | G OD HW ER OD 2" XND BIT SIZE | | _ 10 _ 1D | | WEKSHI INSDE L | OF HAN | MMER _ | PLER | | | L8\$. LN. | HAMMER FALL CASINGSAMPLER |
| | Casing Blows Per foot | SAMPLE | SAMPLE C | | SAMPLE | 0-6 | ON SA | PER 6" | 18 . 24 | DENSITY OR CONSIST. MOISTURE | PROFI CHAN DEPT | GE FELD IDENTIFICATION |
| - o - 40 | | R2 | 32'-42' | | | REC ROD | | | | | | FROM 26.3'TO 26.9' A 70-DEGREE FOLIATION JOINT, ROUGH, OXIDIZED, TIGHT. |
| 50 - 10 - | | | | | | | | | | | | FROM 37.3'TO 40.3', ROCK IS FRACTURED, FRIABLE ALONG A SUBVERTICAL FOLIATION JOINT, SLIGHTLY OXIDIZED, |
| # · | | R3 | 42' -52' | | | REC RQD | | | | | | ROUGH, OPEN, WITH THREE 10-DEGREE JOINTS ACROSS FOLIATION, ROUGH, OPEN. (2-65) |
| 60 -20 · | | R4 | 52'-62' | | | REC RQD | _ | | | | | BELOW 40.3' MODERATELY CLOSE JOINT SPACING, EXCEPT FROM 44' TO 45' AND 56.5' TO 58' WHERE ROCK IS CLOSELY JOINTED. |
| 70 -30 | | R5 | 62'-72' | | | REC | | | | | | FROM 49.6' TO 50', A 70-DEGREE JOINT WITH FOLIATION, OXIDIZED, ROUGH, TIGHT. FROM 55.7' TO 56.5',TWO FOLIATION |
| B0 | | | | | 92% | RQD | | | | - - - - - | | ED, SMOOTH, TIGHT. AT 56.5' AND 63', TWO 60-DEGREE JOINTS ACROSS FOLIATION, OXIDIZED, SMOOTH, IIGHT. |
| 1 | Engineer: | | | | | | D | rller: _ | G | REG MA | RNEY | - |
| Detta | ng Inspecto | ar: | | | | | н | elper: _ | G | REG WI | LLIA | ams |

MOSHOLU GOLF COURS

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MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

LOCATION BRONX, NY
HOLE NO. MG-B34-99
LINE & STA E: 625, 136.85

| PBC | | #1 | 11 CA | SING OUI | DAIE | | DATE | . SLARI: | | 9-99 | GR | OUND ELEVATION 187.81 |
|------------------------------------|-----------------|--------|-------------------------------|----------|---------------------------------|--|-------------------------|-----------|---------|---------------------------------------|--------------------------|--|
| ASING OD AMPLER OL IAMOND BI | <u>HW</u> 2" | | AL CASING (| | WEIGHT | OF HAN | MER _ | , FINISH: | - | -10-99 | LBS | HAMMER FALL CASINGSAMPLER |
| CAS BLO PER 1 | | SAMPLE | SAMPLE C | | SAMPLE | 0 - 6 | BLOWS ON SA 6 -12 | MPLER | 16 - 24 | DENSITY OR CONSIST. MOISTURE | PROFIL CHANC DEPTH | PELD IDENTIFICATION |
| 100 | | R7 | 82'-89' 82'-89' 89'-97' | | 99% 99% 90% 99% 81% | REC ROD REC ROD REC ROD | | | | | 10 | FROM 56.5' TO 58', A SUBVERTICAL JOIN ACROSS FOLIATION, OXIDIZED, ROUGH, TIGHT. FROM 64.3' TO 65', ROCK IS SOFT, FRIABLE, OXIDIZED, ALONG A 50-DEGREE FOLIATION JOINT. FROM 65' TO 99', MODERATELY CLOSE JOINT SPACING. AT 85.5', 88' AND 90.5', 70-DEGREE JOINTS ACROSS FOLIATION, OXIDIZED, ROUGH, TIGHT. IN GENERAL, THE ROCK IS GOOD FROM 40.3' TO 99'.(1-65) FROCK IS WEATHERED, FRACTURED, FRIABLE SOFT, OXIDIZED, WITH SIX 10-DEGREE JOINTS, OXIDIZED, ROUGH, OPEN. ROCK QUALITY IMPROVES BELOW 101.5'. (3-65/2-65) |
| 120 | | | | | | | | | | | | |
| Soil Engin | oer: | | | | | <u> </u> | | xiller: _ | G | REG MA | ARNE | , |
| Drilling in | spector | r | | | | - | F | lelper: | 6 | REG W | ILLIF | AMS |

JUL CUCHICH

7

WGI Warren George Inc.

SHEET ______ OF ______
LOCABON BRUNX, NY
HOLE NO _______ MG-B35-99
LINE & SIA ______ N: 322, 992.78
OFFSET ______ E: 625, 158.76

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| AMPL | 5 00 HW ER O.D 2" END BI SIZE | | 10 | WEIGHT INSIDE L | OF HAN | IMER _ | 300 TER |)-14(24 | 0 | , LBS. _ IN. C | 2/5/199 HAMMER FALL CASING 24" SAMPLER 30" |
|------|-------------------------------------|------------|----------------------------|--------------------|-----------|----------------|------------|-------------|---------------------------------------|----------------------------|---|
| 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV FEET | SAMPLE | | BLOWS ON SA | | 18 - 24 | DENSITY OR CONSIST NIOISTURE | PROFILE CHANGE DEPIH | FIELD IDENTIFICATION OF SOIL |
| י ט | | | 0'-2' | 10" | | .7 | 7 | 6 | | 0'- 2' | TOPSOIL (6"). DAR SAND, ORGANIC MATTER. MEDIUM |
| | | | 2'-4' 4'-6' | 12" | | 10 | 20 | 23 15. | | | DENSE, (SM) (11-65) RUSTY BROWN SILTY FINE SAND, TRACE |
| | | SS4 SS5 | 6'-8' 8' | 5" | 71 100 | 36 /0" | 38 | 43 | | 8' | SOME GRAVEL. DENS TO VERY DENSE. (SM.SP-SM) (7-65) GREENISH GRAY SIL |
| 10 - | | 556 | 10'-12' | 8" | 22 | 44 | 78 | 100 | | | SAND, SOME TO LITTLE GRAVEL, COBBLES AND |
| | | | 12'-14' 15' | 4" 0" | 55 100 | | ./2" | | | 15' | BOULDERS. VERY DENSE. TILL MATERIAL. |
| | | | 16'-18' 18'-19.2' | 10" | 20 45 | 26 53 | 36 100 | 30 | WASH | | (9M AND GM) (6-65/5-65) YELLOW BROWN SILT |
| - 20 | | | | | | | | | | 21' | F-M SAND WITH MIC ROCK FRAGMENTS (GNEISS), COBBLES VERY DENSE. POSSIBLE SAPROLI SOIL (DECOMPOSED |
| | | R1 | 21'-27' | | REC | | | | | - | ROCK). (SM AND G (6-65/5-65) GNEISS. MEDIUM GRAY. |
| - 30 | | | | | | | | | - - - - - - - | | HIGHLY WEATHERED SOFT TO MODERATE HARD, FRACTURED, OXIDIZED FROM 21 |
| | | R2 | 27'-37' | | RE(| | | | | · | 32'. FOLIATION A 70 TO 85 DEGREES NUMEROUS FRACTUR AT 20 TO 30 DE- GREES, WITH |
| Nac | | | | | <u> </u> | 1 | | 1 | ius sur | 1 | FOLIATION TREND. |

WGI Warren George Inc.

| HEC! | _ ² cc ² |
|------------|--------------------------------|
| OCAHON. | BRONX, ONY |
| HOLE NO _ | MG-835-99 |
| LINE & SIA | N: 322, 992.78 |
| OFFSET | E: 625,158.76 |

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| MRA JAMA OMAK | R O.D 2" | NQ | 10 | WEIGHT INSIDE U | | | | 0-14 24 | 0 | . LBS IN. | HAMMER FALL CASING 24" SAMPLER 30" |
|---------------------|-----------------------------|--------------|---|--------------------|----------|--------------|--------------|------------|---------------------------|--------------|--|
| | CASING BLOWS PER FOO! | SAMPLE | SAMPLE DEPIHS ELEV FEET | SAMPLE - | , | | MPLER | | DENSITY OR CONSIST. | PROFILE | I FIFED IDENTIFICATION |
| | MER FOCT | 6 Z | | S 12 | 0 6 | 6 ·12 | 12 18 | 18 - 24 | MOISTURE | DEPIH | Thou examen 24 all |
| 40 | | | | | | | | | | ľ | IRON STAINED. (4-65 ROCK QUALITY |
| 1 | | | | | | | | | |] | IMPROVES AT 32'. FROM 32' TO 40.5', |
| ! | | | | | - | | | | | | MODERATELY HARD, WEATHERED, CLOSE |
| | | R3 | 37'-47' | | REC | | | | 1 | 1 | JOINT SPACING. SUB |
| 50 | | | | 75% | ROD | - | - | - | 1 | 1 | VERTICAL JOINT FRO |
| - 10 - | | | | 1 | | | | 1_ | 1 | | SOME OXIDATION ON JOINTS. (3-65) |
| • | | | | | | | | | | | |
| | <u> </u> | | | - | | - | - | } | 1 | 1 | MODERATELY CLOSE JOINT SPACING BELC |
| | | | | 100.00 | | | | | 1 | | 40.5'. FOLIATION |
| | | R4 | 47'-57' | 98% | REC | | + | <u> </u> | 1 | | AT 60 DEGREES TO SUBVERTICAL. |
| 60 | | | | 967 | RQD | | | - | 7 | • | AT 54.7', AN 80- DEGREE FOLIATION |
| -20 | | | | | <u> </u> | | | | 1 | | JOINT, OXIDIZED, |
| | - | | | _ | | - | + | +- | - | | ROUGH, DPEN, AND A 40-DEGREE JDINT |
| | | | | | - | | | _ | 1 | | WITH FOLIATION TREND, OXIDIZED, |
| 1 | | R5 | 57'-65' | | REC | | | 1 | | 65' | |
|] | | <u> </u> | <u> </u> | 967 | RQI | } | | | | | |
| | | | | - | | | | | | | END OF HOLE CEL |
| 70 -30 | | | | | | | | | _ | | END OF HOLE 65' |
| | | - | <u> </u> | - 100 | | - | - | - | _ | | ļ |
| | | | | | | <u> </u> | | | ゴ | | |
| 1 | - | | | +- | +- | 1 | +- | | | 1 . | |
| | | | | | 1- | 1 | 1 | 1 | 7 | | |
| | | | | | | | | + | | | |
| 80 | · | | | 4 | | | | | 4 | | |
| -41 | . —— | | , , , , , , , , , , , , , , , , , , , | | | | | | | | |

TOB FOCYTION:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | OF | 2 |
|------------|-----------|-------|
| LOCATION | DOONIV | NY |
| HOLE NO _ | MG-B36- | 99 |
| LINE & SIA | N: 323, 1 | 89.97 |
| DEEGE! | E:625, 1 | 84.19 |

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

|) | | H | H CASING OUI DATE | DAIE | | DAIE | | 2- | -25-99 -26-99 | GROU | ND ELEVATION 182.43 ND WATER ELEVATION 169.06 3124139 |
|-------------------------|------------------------------------|----------------------|------------------------------------|--------------------------|-------------|-------------------------|------------|---------------------|---------------------------------------|----------------------------|---|
| ASING MANIPL MAMO | OD HW ER O.D 2" IND 811 \$2E | NQ | 1.0 | Weight Inside L | OF HAN | IMER OF SAME | 304 TER | 0-140 24 | 0 | _ IN C | HAMMER FALL ASING 24" SAMPLER ^{30"} |
| 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPIHS ELEV / FEET | SAMPLE | 0.6 | 8LOWS ON 5A 6 -12 | | 18 · 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| u – | | \$52 \$53 \$54 | 0'-2' 2'-4' 4'-6' 6'-7.2' | 20" 18" 16" NR4 | 6 9 9 | 3 6 9 56 | | 4 9 15 /3" | | 01- | TOPSOIL (4"). RUSTY BROWN SILTY F-M SAND, TRACE GRAVEL, COBBLES. LOOSE TO VERY DENSE. (SM) (7-65) |
| - 10 - | | | 8'-8.1' 10'-12' | 15' | 14 | 18 | | 34 | | | ROLLER BIT FROM 12' TO TOP OF ROCK |
| - 20 | | | | | | | | | | 16' | GNEISS. LIGHT GRAY TO MEDIUM GRAY. HARD. QUARTZITIC FROM 26' TO 31.5'; 43' TO 45'; AMPHI- BOLITIC FROM 31.5' TO 36'; 51' TO 61' |
| - 30 | | R1 | 16'-26' | | REG | | | | | | FOLIATION AT 50 DE GREES TO SUBVERT- ICAL. OXIDATION ON JOINTS TO 20.5'. SLIGHTLY WEATHERED TO UNWEATHERED ROCK. |
| | | R2 | 26'-36' | | 2 RE 2 RQ | | | | | | FROM 16' TO 21' CLOSE JOINT SPAC- ING. (3-65) GOOD ROCK BEGINS AT 21'. MODERATELY JOINTED TO MASSIVE BELOW 21'. |
| 1 | l Engineer: | | | | | | Jelper: | | aus sur | | DEKE |

JOB TOCATION.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| CASIN SAMPL | G O.D HW ER OD 2" OND BIT SIZE | F | III CASING OUI DATE | WEIGHT | OF HAI | DAI | E. FINISH | 0-14 | | | ROUND ELEVATION 182.43 ROUND WATER ELEVATION 159.06 HANSMER FALL CASING 24" SAMPLER 30" |
|--------------------------------|--------------------------------------|--------|----------------------------|---------|--------------------------------------|-------|-----------|---------|---------------------------------------|--------------------------|---|
| - 0 - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV FEET | SAMPLE | 0.6 | ON SA | PER 6' | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFII CHANG DEPTI | FIELD IDENTIFICATION |
| 50 -10 -20 -30 -40 | | R4 | 36'-46' 46'-56' | 100 957 | REC ROD X ROD REC ROD | REC | | | | 61' | FROM 16.25' TO 16.8', A 60-DEGREE FOLIATION JOINT, SMOOTH, OPEN, OXIDIZED. FROM 18.25' TO 20.25', A SUB- VERTICAL FOLIATION JOINT, OPEN, SMOOTH, OXIDIZED, WITH THREE 10-DEGREE JOINTS ACROSS FOLIATION, ROUGH, OXIDIZED. FROM 31.5'TO 32', A 60-DEGREE JOINT WITH FOLIATION TREND, ROUGH, TIGH WITH TWO 70-DEGREE FOLIATION JOINTS, ROUGH, TIGHT. FROM 36' TO 46', A SINGLE CORE PIECE RECOVERED. (1-65) END OF HOLE 61' WATER PRESSURE TESTS IN ROCK FROM 20' TO 61'. TWO PIEZOMETERS INSTALLED AT 16' AND 58.5'. |
| | Engineer: _ | | | | | | fller: | | JS SUR TEVEN | | DEKE |

DO LOCATION."

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | O _F 3 |
|------------|------------------|
| LOCALION | BRONX, NY |
| HOLE NO | MG-B37-99 |
| LINE & STA | N: 323, 357. 28 |
| CINE & SIA | E: 625, 222, 24 |

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| PlH | | | | DAIE | | DAIE S | iARI- | 3- | -10-99 -16-99 | | | NO ELEVATION 175.48 |
|----------|-----------------------------|-------------|------------------------------|--------|---------------------|---------|-------|-------|-----------------------------|---------|---------------|--|
| MPLE | | | ALL CASING OUT DATE | WEIGHI | OF HAMM ENGTH OF | 4E& | 300 |)-140 | 0 | | 1 | HAMMER FALL ASING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV . FEET | SAMPLE | | LOWS PE | PLER | | DENSITY OR CONSIST MOISTURE | CH | OFILE ANGE | FIELD IDENTIFICATION OF SOIL |
| -20 N | | R1 | 211-307 | | d 2 | REC | | | | | 21' | ANGLED BOREHOLE DIRECTION: S 10 DEGREES W ANGLE 60 DEGREES ROLLER BIT TO TOP OF ROCK NOTE: ALL DEPTHS SHOWN AS "DOWN-HOLE" OR NON-VERTICAL GNEISS. LIGHT GRAY HIGHTLY WEATHERED FROM 22' TO 26', THE REST MODERATEL WEATHERED TO UN- WEATHERED. QUARTZ- ITIC FROM 40' TO 60', 68.5' TO 79', 102' TO 104'. FOILATION AT 40 DE GREES TO SUB- VERTICAL, MOSTLY AT 70 DEGREES. OXIDATION ON JOINT TO 26' AND AT |
| | | R2 | 30'-40' | | REC | | | | _ | | | 46.75'. VERY CLOSE JOINT SPACING FROM 24' 1 |
| 41 | 0 L | | | | 0%. <u>RQ</u> I | • | iler. | | REYNOL | .D6 | BRI | DGFAL |
| | | | | | | | | | ALVRO | | | |
| | | er vali 650 | | | | | | | | | | |

WGI Warren George Inc.

SHEET 2 3
LOCATION BRONX, NY
HOLE NO MG-B37-99
LINE & SIA E: 625, 222.24
OFFSET

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| | | | FOR: | TIETOM | LFORE | Y UU | HHYE | N AN | D SAWY | EK i | |
|-------------------------|-------------------------------------|--------|--|--------------------|-----------|-------------------|----------------|------------|---------------------------|--------------------------|--|
| Di Pin | | ! | I II CASING OUI I ALI CASING OUI DATE | DATE _ | _ | | . SIART | | -10-99 -16-99 | | COUND BLEVATION 175.48 |
| CASIN SAMPI DIAMK | S OD HW ER OD Z" OND BIT SEZE | NQ | _10 | WEIGHT INSIDE I | Of HAI | MMER _ OF SAME | | 0-14 24 | 77.0 | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLER30" |
| | CASING BLOWS PER FCOI | SAMPLE | SAMPLE DEPTHS ELEN FEET | SAMPLE | | ON SA | 1 10100-0-1010 | - | DENSITY OR CONSIST. | PROFIL CHANG DEPTI | HELD IDENTIFICATION |
| - 0 - | | | | - ē | 0.8 | 6 -12 | 12 18 | 18 - 24 | MOISTURE | DEPI | |
| 40 | | | | | | | | | | | MAINLY FOLIATION JOINTS, OXIDIZED. MODERATELY CLOSE JOINT SPACING BELOW |
| 5 0 | | | | | | | | | | | 26'. IN GENERAL, ROCK IS MODERATELY JOINTED BELOW 26'. FROM 21' TO 22.8', |
| 50 - 10 - | | _R3 | 40'-50' | 100 | % RQD | REC | | | | | A SUBVERTICAL FOLIATION JOINT, ROUGH, OXIDIZED, |
| | | | | | | | | | | | SOFT FROM 22' TO 22.8', WITH FOUR 30-DEGREE JOINTS |
| | | | | | | | | | | | ACROSS FOLIATION, ROUGH. FROM 21' TO 26'. (2-65) ROCK CLASS. |
| 60 -20 | | R4 | 501-601 | 100 | <i>7.</i> | REC | | | | | AT 39.8', A FOLIATION JOINT AT 85 DEGREES, SMOOTH, |
| 9 | | | | | | | | | | | TIGHT. FROM 60' TO 60.5', AND FROM 61.5' TO |
| | | 200 | | | - | | | | | | 62.25', TWO FOLIATION JOINTS A' 80 DEGREES, ROUGH, |
| 70 -30 | | R5 | 60'-70' | 100 | 7 | REC | | | | | TIGHT. AT 63', A 60-DEGREI JOINT ACROSS |
| | | | | 97% | RQI | | | | | | FOLIATION, ROUGH, TIGHT.ACROSS |
| | | | | | | | | | | | IN GENERAL, VERY GOOD QUALITY ROCK BELOW 26'. (1-65) |
| 80 | | R6 | 70'-80' | 99% | REC | | | | | | |
| -40 | <u> </u> | | | | RQI | | | | 1 | <u> </u> | |
| Sof | Engineer | | | | | Dri | iter: | RE | EYNOL.DS | B BR | IDGPAL |
| Delilie | g Inspector | | | | | Не | iper: _ | Al | _VRO_L(| סמאם | N |

JOB LOCATION.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc. SUBSURFACE EXPLORATION

SHEET 3 OF 3
LOCATION BRDNX, NY
HOLE NO. MG-B37-99
LINE & STA N: 323, 357. 28
OFFSET E: 625, 222. 24 OFFSET ___

| DEPIH DEPIH | | #1 | H CASING OUI ALL CASING OUI DAIL | DAIE | | | . Start | | -10-99 -16-99 | — 1 GiCO | ND ELEVATION 175.48 ND WATER ELEVATION |
|----------------|-------------------------------------|------------------|-------------------------------------|--------------------|-------------------|------------------|------------------|------------|---------------------|---|--|
| AMPL | OD HW ER O.D. 2" IND BIT SIZE | | 1.D | WEIGHT INSIDE E | of had Engih (| AMER _ Of SAM | 30 PLER | 0-14 24 | _ LBS. IN, C | HAMMER FALL ASING 24" SAMPLER ³⁰ " | |
| | CASING BLOWS- PER FOOI | SAMPLE NUMBER | SAMPLE DEPTHS ELEV FEET | SAMPLE | 0.6 | | PER 6" IMPLER | 18 - 24 | DENSITY OR CONSIST. | PROFILE CHANGE DEPTH | HELD IDENTIFICATION OF SOIL |
| 80 80 | | | | | | | | 10 - 24 | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 90 - 10 - | | R7 | 801-901 | 98% | REC | | | | | 1 | F |
| | | | | | RQD | | | | | | |
| | | | | | | | | | | | |
| | | - | | | | | | | | } | |
| | | | | 1. | | | | | | | |
| 100 | | PO | 90'-100' | 90* | DEC | | | | | | |
| - 20 - | | 1 | -100 | 98% | REC | | <u> </u> | | | | |
| | | | | | | | | | | 1 | |
| | | R9 | 100'-105' | | REC | | | | | 105' | |
| | | | | 907 | ROD | | | | | | |
| 110 | <u> </u> | | | | | | | |] | | END OF HOLE 105' |
| -30 | | 1 | | | | | | | | | |
| | | ļ | | | | | | | } | | |
| | | <u> </u> | | | | - | | | 7 | | |
| | | | | | | | | | | | |
| 12 | d | | | | | | | | - | | |
| -40 | <u></u> | <u> </u> | | | | | | | 1 | L., | |

WGI Warren George Inc.

SHRET 1 OF 2
LOCATION BRONX, NY
HOLE NO. MG-B38-99
LINE & STA N: 323, 518-23
OFFSET E: 625, 223-30

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| | L- + -/- | | FOR: | EICHL | 'L KET | יייייייייייייייייייייייייייייייייייייי | THILE | A HIAT | J SHWT | EK. | |
|---------------|--------------------------------------|----------|-------------------------------------|---------------------|-------------------|--|---------------------|--------------|---------------------------|---------------------------|--|
| # P(I) | | !! !! | H CASING OUI ALL CASING OUI DATE | DAIE | | DATE | . SIARI . FINISH | | -22-99 -23-99 | GR | DUND ELEVATION 176.99 DUND WATER ELEVATION 170.11 3124139 |
| AMPLI | 00 HW 2002 <u>"</u> NO BII SZE | | 1.D | WEIGHT INSIDE LI | of Ham Engih (| HMER OF SAME | 300 LER | 24 | 0 | _ LBS. IN. | HAMMER FALL CASING 24" SAMPLER ³⁰ " |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV : FEET | SAMPLE | | BLOWS ON SA | MPLER | | DENSITY OR CONSIST. | PROFILI CHANG DEPTH | FIELD IDENTIFICATION |
| | | | | - <u>&</u> | 0 0 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | Depin | <u> </u> |
| | | SS1 | 0'-2' | 24" | 1 | 1 | 1 | 1 | | 0'- | RUSTY BROWN SILTY FINE SAND. LODGE TO DENSE. (SM) |
| | | 552 | 21-41 | 18" | 7 | 11 | 13 | 22 | | 4, | (7-65) |
| | | | 4'-5.5' | | 16 | | | | | | BROWN SILTY F-M |
| | | 554 | 6'-6.5' | | 100 | | | | | 7' | SAND, TRACE GRAVEL COBBLES. DENSE. (SM) (6-65) |
| - 10 - | | | | | | | | | | - | GNEISS. MEDIUM GRAY, SCHISTOSE FROM |
| | | R1_ | 7'-12' | | REC ROD | | | | | | 7' TO 12'. FOLIATION AT 70 DEGREES. OXIDATION |
| | | - | | | | | | | | | ON JOINTS TO 19.5" |
| | | R2 | 12'-17' | | REC ROD | | | | <u> </u> | | FRACTURED, WEATHER ED FROM 7' TO 12'; SEVERAL STEEP |
| - 20 - | | R3 | 17'-20' | 100 | % RQD | RÉC | | | 1 | 201 | FOLIATION JOINTS, OXIDIZED FROM 12'T 16'. (3-65) |
| | | | | | - ISEE | | | | | | ROCK QUALITY IM- PROVES FROM 16'. |
| | | | | | | | <u> </u> | | | 3 | FOLIATION JOINTS PRODOMINANT FROM 16'. |
| | | | | | | | | | | | FROM 15' TO 16', A SUBVERTICAL FOLIA- |
| -30 | - | - | | +- | | | | | - | | TION JOINT, SMOOTH OXIDIZED, TIGHT, WITH TWO 10-DEGREE |
| | | | | | | | | | | | JOINTS ACROSS FOLIATION, ROUGH, |
| | | <u> </u> | | | | - | | - | - | | SLIGHTLY OXIDIZED. |
| | | | | | | | | | | | |
| | <u> </u> | | - | - | | - | | - | - | 1 | |
| Soil | | | | · | ·• | | riller: | | REG MA | RNEY | JR. |
| Ì | ing Inspect | • | | | | | - | | HEO RO | | |
| | | | | | | | | | | | |

JOB LOCATION.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | 2 0, 2 |
|------------------------|----------------|
| LOCATION_ | BRONX, ON |
| HOLE NO. | MG-B38-99 |
| LINE & STA. | N: 323,518.23 |
| Ottoti Flut or sive | E: 625, 223.30 |

| L.9901B | FOR: M | ETCAL | F&EDI | DY-HA | ZEN A | ND SAWYE | -R | | |
|---|------------------------------|--------------------|--------------------|----------------------------------|-------------|---------------------------------------|---|--|--|
| 911 F1 914 F1 | H CASING OUF L | DAIE | | DAIE. SI DAIE. FI | AKI | 2-22-99 2-23-99 | GROUN | D ELEVATION 176.99 D WATER ELEVATION 170.11 3124199 | |
| SING OD HW UPLER O.D 2" LIMOND BIT SZE NQ | . 1D | WEIGHI INSIDE L | of Hami Engih o | MER F SAMPLER | 300-1 24 | 40 | LBS. HAMINER FALL CASING 24" SAMPLER 30" | | |
| CASING BLOWS PER FCOI | SAMPLE DEPTHS ELEV - FEET | SAMPLE | | BLOWS PEI ON SAMP 6 -12 12 | LER | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPIH | FIELD IDENTIFICATION OF SOIL | |
| -30 | | | | | | | | FROM 18.5'TO 19.5'A CURVED FOLIATION JOINT, ROUGH, OXIDIZED, TIGHT, WITH TWO 10-DEGREE JOINTS ACROSS FOLIATION, ROUGH, SOME OXIDATION, TIGHT. (2-65) END OF HOLE 20' PIEZOMETER INSTALLED AT 18'. | |
| Sol Engineer: | | | | Dri | iller: | GREG N | MARNEY | JR. | |
| Oriting Inspector: | | | | | elper: | THEO I | RODRIGL | SEZ | |

WGI Warren George Inc.

| SHEE! | OF |
|-----------|----------------|
| IOCALICH. | BRONX, NY |
| HOLE NO _ | MC_030 AA |
| UNE & SIA | N: 322, 835.71 |
| | E:625,248.43 |
| OFFREI | |

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| | | | TOR. | 10110 | | | | | | | |
|---------|---|------------------|-------------------------|---------------------------------------|------------|----------------|-------------|--------------|--|----------------------------|---|
| | | | IT CASING OUT DATE | | | | | | -2-99 -4-99 | _ GROU GROU | IND ELEVATION 179.20 IND WATER ELEVATION 172.18 |
| SANIPLI | 3 00 <u>HW</u> ER 00.2 <u>"</u> NO BIT SIZE | | WEIGHI INSIDE L | OF HAM ENGIH C | IMER _ | 304 TLER | 0-140 24 | 0 | Manufacture against 2 May 1 Ma | | |
| | CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE DEPTHS ELEY FEET | SAMPLE | | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| - 0 - | | | 01-21 | 6" | 2 | 2 | 4 | 2 | | 0'- 2' | TOPSOIL (6"). DARK BROWN SILTY SAND, ORGANIC MATTER. |
| | | | 2' -4' 4' -6' | 10" | 3 | 9 | 5 | 5 | | 6' | TAN BROWN SILTY FINE SAND, TRACE |
| | | | 6'-8' | | 46 | 48 | 25 | 60 | | , | GRAVEL. LOOSE TO MEDIUM DENSE.(SM) (7-65) |
| — 10 - | | | B' -10' 10' -12' | 8" | 99 | /2" 96 | | 91 | 1 | | YELLOW BROWN SILTY F-M SAND, TRACE TO SOME GRAVEL, ROCK FRAGMENTS, MICA, |
| | | | 12'-14' 14'-16' | | 30 25 | 32 | 31 | 31 | | 8 | COBBLES. VERY DENSE. POSSIBLE SAPROLITIC SOIL |
| | | | | | 20 | | | | | 16, | (DECOMPOSED ROCK). (SM AND GM) (6-65/5-65) |
| -20 | | R1 | 16'-21' | | REC | | | | | | GNEISS. LIGHT GRAY SLIGHTLY WEATHERED TO UNWEATHERED, |
| | | R2 | 21!-25! | | REC | | | | - - - - | | OXIDIZED ON JOINTS TO 28' AND AT 50.9', 61.5', AND 65.5'. |
| -30 | | R3. | 25! -30.5! | | REC ROI | | | | | | SOFT TO MODERATELY HARD. FRACTURED FROM 16' TO 18'. FROM 16' TO 16.5' |
| | | | | | | | | | | | AND 16.8' TO 17.2' TWO SUBVERTICAL FOLIATION JOINTS, 8MOOTH. (3-65) |
| - 40 | | R4 | 30.5'-40.5' | | Z REI | | | | | | ROCK QUALITY IM- PROVES AT 18'; UNWEATHERED, HARD, |
| Soil | Engineer: | <u> </u> | | · · · · · · · · · · · · · · · · · · · | | c | Oriller: | | ESAR N | 10RIER | <u> </u> |
| Drift | ling Inspec | lor: | | | | ŀ | lelper: | ^ | IIKE KE | ELLY | |
| | - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | 5 | 2.7 | | | | C - 0 - 0 10 | - No. 1841 | | MM 148: |

JOB LOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | 2 _ 2 - | |
|------------|--------------|----------------|
| LOCAHONA | BRONX, ONY | |
| HOLE NO | MG-B39-99 | |
| | N: 322,835.7 | T- |
| LUNG & SIA | E:625,248,4 | 3 - |

L.9901B

METCALF&EDDY-HAZEN AND SAWYER

| | | | II CA | | | | DAIE. | FENISH | 2 | -2-99 -4-99 | _ GROU | IND ELECTION 179.20 IND WATER ELEVATION 172.18 2/5/99 |
|------------|---------------------------------|--------|---------------------|-------------------|-----------------|--------------|----------------|----------|---------|------------------------------------|---------|---|
| LIPI FI | CO HW R O.D Z" ND BII SZE | | WEICHI INSIDE LE | of Hami NGIH O | MER _ F SAMP | 300 LER |)-14 24 | o | LBS C | HAMMER FALL ASING 24" SAMPLER 30" | | |
| | CASING BLOWS | SAMPLE | SAMPLE : | | SAMPLE | | BLOWS ON SA | MPLER | | DENSITY OR CONSIST | PROFILE | FIELD LIDENTIFICATION |
| ۱, | PER FOOT | 57 Z | | | v ě | 0 0 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | DEPIH | MODERATE: V. CV DOE |
| ٥ | | | | | | | | | | | | MODERATELY CLOSE JOINT SPACING. FOLIATION AT 60 DEGREES TO SUB- VERTICAL. AT 23.7' A 70-DE- |
| | | | | | | | | | | | | GREE FOLIATION JOINT, SMOOTH, MICA |
| iO 10 - | | R5 | 40.51- | 50.57 | | REC RQD | | | | - - - - - | | AT 45' AND 51.7', TWO 60-DEGREE FOLIATION JOINTS, SMOOTH, TIGHT, WIT A 70-DEGREE JOINT |
| | | | | | | | | | | † - | | ACROSS FOLIATION. |
| 50 | | | | | | | | | | | | TO 61.5'. GENERAL' GOOD ROCK. (2-65) |
| - 20 - | | R6 | 50.5'- | 60.5' | | REC | | | | | | |
| | | R7 | 60.5'- | <u> 65.5′</u> | | REQ | | | | <u>-</u> | 65. | |
| 70 -30 | | | | | | | | | 1- | - - | | END OF HOLE 65.5 |
| | | | | | | - | | | | = | | |
| | | | | | | | | + | | | | |
| 80 | | 1 | | | - | | | | | | | |
| Soi | i Engineer. | Б | • | | | , | | Oriller: | | CESAR | MORIE | RA |

Warren George Inc. SUBSURFACE EXPLORATION

SHEEL 1 OF 3
LOCATION BRONX, NY
HOLE NO MG-840-99
UNE & SIA N: 323, OB1. 15
OFFSEI E: 625, 270. 16

| | L. 7: | 9018 | FOR: P | ETCAL | _F&EI | -אמנ | HAZEI | N AN | D SAWY | ER | |
|---------|-----------------------------|----------|------------------------------|--------------------|------------|----------------|------------|------------|------------------------------|----------------------------|--|
| 184 K | | # | II CASING OUI DAIL | | | DAIE | . FINISH | 1 | -28-99 -29-99 | GROUI | ND ELEVATION 177.77 ND WATER ELEVATION 171.43 21199 |
| AMPLE | ROD HW ROD 2" | | ID | WEIGHT INSIDE L | OF HAN | IMER _ | 30 PLER | 0-14 24 | 0 | . LBS IN C/ | HAMMER FALL ASING 24" SAMPLER ³ O" |
| | CASING BLOWS PER FCCI | SAMPLE | SAMPLE DEPTHS ELEV : FEET | SAMPLE | | BLOWS ON SA | MPLER | | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| ••+ | | 991 | 0'-2' | 12" | | 4 | 12 · 18 | 18 - 24 | MOSTORE | 0'- | TOPSOIL (3"). DARK GRAY SILTY SAND, |
| | | | 2'-4' | 14" | | 10 | 11 | 16 | ! | 2. | ORGANIC MATTER. |
| } | | | 47-67 | 12" | 12 | 14 | 11 | 12 | £ | | RUSTY BROWN SILTY FINE SAND, TRACE TO |
| | | _ SS4 | 6'~8' | 2" | 10 | 100 | /1" | | | | SOME GRAVEL, COBBLES, BOULDERS. MEDIUM DENSE TO |
| - 10 | | SSS | 10'-11.5' | 12" | 20 | 37 | 100 | /3" | | 10' 11.5' | DENSE.(SM)(6-65) YELLOW BROWN SILTY F-M SAND WITH MICA |
| Ì | | | | | | | | | | | ROCK FRAGMENTS. VERY DENSE. |
| 2 | | | | | | | | | | | POSSIBLE SAPROLITI SOIL(DECOMPOSED ROCK). (SM AND GM) (6-65/5-65) |
| - 20 - | | R1 | 11.5'-21.5' | | REC RQD | | | | | | GNEISS. LIGHT GRAY TO 34', QUARTZITIC FROM 20.5'TO 31.5' |
| | | | | | | | | | - - - - - | | MEDIUM GRAY BELOW 34'. WEATHERED TO 32'. FOLIATION AT 30 TO 70 DEGREES. OXIDATION ON JOINT |
| | | | | | | | | |] | | TO 38'. |
| -30 - | | R2 | 21.5'-31.5' | | REC | | | | | | FROM 11.5'TO 20.3' HARD, SLIGHTLY WEATHERED, MODERATELY CLOSE |
| | | | | | | | | | | | JOINT SPACING. FROM 20.3'TO 20.6' A 60-DEGREE |
| -40 | | | | | | - | | | | | FOLIATION JOINT, ROUGH, TIGHT. FRACTURED, WEATHER ED AND OXIDIZED |
| Soil | Engineer: | <u> </u> | | | | D | riller: _ | R | EYNOLD | S BRII | |
| Drillir | ng inspecto | r: | | | | — н | elper: _ | Α | LVRO L | .DODON | |

Warren George Inc. SUBSURFACE EXPLORATION

| SHEET | 2 0 3 |
|-------------------|---------------|
| LOCATION. | BRONX, OF NY |
| HOLE NO _ | MG-840-99 |
| Contract Contract | N: 323,081.15 |
| LINE & STA | E:625,270.16 |

| 10 10 10 10 10 10 10 10 | L.9 | 9018 | ļ | OR: MI | ETCAL | F&ED | DY-I | HAZEI | MA N | D SAWY | ER | | | | | |
|--|--------------|----------|----------|---------|---------------------|--|-----------------|-----------------|------------|---------------|-----------------|--|--|--|--|--|
| MANCHOR DIS AMPLE DEPTHS CASHIG To be Common Com | | | | UI DAIE | | | DAIE | . Finish | 1 | -29-99 | GROU | IND WATER ELEVATION 1/1-43 | | | | |
| 0 R3 31.5'-41.5' 952 REQ | MPUR O.D. 2" | <u> </u> | | | WEIGHT INSIDE LE | OF HAM | IMER OF SAME | 30° | 0-14 24 | 0 | _ LBS. IN. C | | | | | |
| 0 R3 31.5'-41.5' 952 REQ | BLOWS | SAMPLE | | | SAMPLE | . | ON SA | MPLER | | OR CONSIST | CHANGE | | | | | |
| FOURTEEN 30-DEGRE FOLIATION JOINTS, OXIDIZED, ROUGH. R4 41.5'-51.5' 987 REC 28.5' TO 29.5', POSSIBLE SHEARING. R4 41.5'-51.5' 987 REC 31.5', A 70-DEGREE JOINT ACROSS FOLIATION, DXIDIZED, TIGHT WITH TWO 30-DEGREE FOLIATION, DINTS, ROUGH, TIGHT, OXIDIZED. R5 51.5'-61' 987 REC 61' FROM 23.7'TO 31.5' CLOSE JOINT SPACING. AT 32.5', A 70-DEGREE JOINT ACROSS FOLIATION, ROUGH, OXIDIZED, TIGHT. (3-65) BELDW 34', ROCK GUALITY IMPROVES WITH MODERATELY CLOSE JOINT SPACING BELOW 50.5'. AT 37.5', A 10-DE GREE JOINT ACROSS FOLIATION, ROUGH, DXIDIZED, TIGHT. SON Engineer: Domina: REYNOLDS BRIDGPAL | 40 | | 31.5'-41 | .5' | 96% | REC | 0.12 | 12 - 18 | 18 - 24 | | | | | | | |
| POSSIBLE SHEARING. R4 41.5'-51.5' 987 REC 967 ROI 10 1 31.5', A 70-DEGREE JUNT ACROSS FOLIATION, DXIDIZED, TIGHT WITH TWO 30-DEGREE FOLIATION JOINTS, ROUGH, TIGHT, OXIDIZED. FROM 23.7'TO 31.5' CLOSE JOINT SPACING. AT 32.5', A 70-DEGREE FOLIATION, ROUGH, TIGHT, OXIDIZED. TO 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | | | | | | | | | | FOURTEEN 30-DEGRÉI FOLIATION JOINTS, OXIDIZED, ROUGH. FRIABLE, SOFT FROM | | | | |
| FOLIATION, OXIDIZED, TIGHT WITH TWO 30-DEGREE FOLIATION JOINTS, ROUGH, TIGHT, OXIDIZED, TIGHT. | -10 | R4 | 41.5'-5 | 1.5' | | | | | | | | POSSIBLE SHEARING. | | | | |
| OXIDIZED. FROM 23.7'TO 31.5' Sec. Se | | | | | | | | | | | | FOLIATION, OXIDIZED, TIGHT WITH TWO 30-DEGREE FOLIATION JOINTS, | | | | |
| BELOW 34', ROCK QUALITY IMPROVES WITH MODERATELY CLOSE JOINT SPACIN AND WIDE JOINT SPACING BELOW 50.5'. AT 37.5', A 10-DE GREE JOINT ACROSS FOLIATION, OXIDIZED, TIGHT. Soll Engineer: Driller: REYNOLDS BRIDGPAL AL VEOLI ONDON | 5 | RS | 51.5'-6 | 1' | 7 | | | | | | 61' | ROUGH, TIGHT, OXIDIZED. FROM 23.7'TO 31.5' CLOSE JOINT SPACING. AT 32.5', A 70-DEGREE JOINT ACROSS FOLIATION, ROUGH, OXIDIZED, | | | | |
| SPACING BELOW 50.5'. AT 37.5', A 10-DE GREE JOINT ACROSS FOLIATION, OXIDIZED, TIGHT. Sol Engineer: Driller: REYNOLDS BRIDGPAL AL UPO LONDON | | | | | | | | | | | | BELOW 34', ROCK QUALITY IMPROVES WITH MODERATELY CLOSE JOINT SPACE | | | | |
| SON Engineer: Driller: REYNOLDS BRIDGPAL ALUPO LONDON | | | | | | | | | | | | SPACING BELOW 50.5'. AT 37.5', A 10-DE GREE JOINT ACROSS | | | | |
| ALURO LONDON | | | | | | | | | | 1 | | OXIDIZED, TIGHT. | | | | |
| | | <u>-</u> | | | | | | or the court of | - | | | | | | | |

JOB LOCATION:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 3 OF 3
LOCATION BRONX, NY
HOLE NO. MG-B40-99
LINE & SIA N: 323, 081.15
OFFSET E: 625, 270.16

| | | | FI CASING OUI | | | DAIE | SIARI, | 1 | -28-99 -29-99 | GROUE | ND ELEVATION 177.77 ND WATER ELEVATION 171.43 |
|-----------------------|--------------------------------------|---------|-----------------------------|-------|----------------|-----------------|-------------|------------|------------------------------|----------------------------|--|
| ASINI AMPL IAM(| 3 OD. HW ER O.D 2" IND 811 925 | NQ | .D | WEIGH | LENGIH | MMER OF SAME | 30. PLER | 0-14 24 | 0 | LBS. | HAMMER FALL ASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTI ELEV - FEET | 1 3 5 | 0.0 | BLOWS ON SA | | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPIH | FIELD IDENTIFICATION OF SOIL |
| -20 | | | | | | | | | | | FROM 48' TO 48.5', A 60-DEGREE FOLIATION JOINTS, SMOOTH, MICA, TIGHT. AT 54.7', A 70- DEGREE FOLIATION JOINT, SMOOTH, TIGHT. (1-65) END OF HOLE 61' |
| So | l Engineer. | <u></u> | | | . . | { | Oriller: _ | i | REYNOL | DS BRI | DGPAL |
| Dr | iling inspect | tor: | | | | 1 | lelper: | | ALVRO I | LONDON | <u> </u> |

WGI Warren George Inc.

| HEET | - OF |
|-----------|-----------------|
| | BRONX, OF NY |
| LOCATION | MG-B41-99 |
| HOLE NO | N: 323, 329, 79 |
| une a sta | E:625,288.24 |
| OFFSET | -:x |

L.99018

SOR METCALF&EDDY-HAZEN AND SAWYER

| ALL CASING OUI DAIR ID ID SAMPLE DEPTHS ELEV : FEET 2'-4' 7'-12' | WEIGHI INSIDE LI | OF HAMM | MERF SAMPL. BLOWS F ON: SAM 6 -12 1 | 300 | 1- 0-140 24 |) | GROUN | HAMMER FALL SAMPLER SO TOPSOIL (3"). DARK |
|---|---------------------|----------|--|--------------------------|-------------------|---------------------------|----------------------|---|
| SAMPLE DEPTHS ELEV - FEET 0'-2' 2'-4' | SAMPLE SCOVERY | 0·s | BLOWS FON SAN | ER 6. SPLER 2 - 18 | 18 24 | DENSITY OR CONSIST. | PROFILE CHANGE DEPTH | RELD IDENTIFICATION OF SOIL TOPSOIL (3"). DARK |
| (LEV - FEET 0'-2' 2'-4' | 10" | 0·s | ON SAN | 1PLER 2 - 18 | 18 24 | OR CONSIST. | CHANGE DEPIH | OF SOL |
| 2'-4' | 10" | 2 | 4 | | i | | 0'- | |
| | 2" | 100 | /2" | \Box | | 1 | 2' | BROWN SILTY SAND, ORGANIC MATTER. |
| 7:-12' | | | | | | . # | 41. | LOOSE.(SM)(11-65) RUSTY BROWN SILTY FINE SAND, TRACE GRAVEL.(SM) (7-65) ROLLER BIT FROM 4' TO 7' |
| | | % Ron | REC | | | | | GNEISS. LIGHT GRAY TO 11.5', GUARTZITIC BANDS; MEDIUM GRAY BELOW 11.5'. UNWEATHERE OXIDATION ON JOIN TO 25'. FOLIATION AT 60 DEGREES. |
| 3 22' -25' | 71 | d % | RE | | | | 25' | FROM 7' TO 16', MODERATELY CLOSE WIDE JOINT SPACIF FROM 8.9' TO 9.5 A 70-DEGREE JOIN ACROSS FOLIATION |
| | | | | | | | | ROUGH, TIGHT.(1-4) FROM 16' TO 22.5 CLOSE JOINT SPACING. FROM 17.7'TO 18. A 60-DEGREE FOLIATION JOINT, |
| | | | | | | | | OXIDIZED, TIGHT. A 10-DEGREE JOIN ACROSS FOLIATION ROUGH, OPEN; A 7 DEGREE JOINT WIT |
| | | | | | Detiler: | Uniter: | Oritler: REYNOL | Odller: |

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SHEET ______ OF _____
LOCATION BRONX, NY
HOLE NO. MG-B41-99
LINE & SIA N: 323, 329.79
OFFSET E: 625, 288.24

| | L.9 | 9018 | FC | OR: ME | CAL | _F&EI | ו-ץמכ | HAZE | MA N | D SAWYE | ER | * |
|--------------------------|-----------------------------|------------------|------------------------|------------|-----------------|-------------------|-----------------|-----------------------|------------|---------------------------------------|-----------------------------------|--|
|) PIH HIYK | | H | H CASIN | IC OUI DAI | E | | DAIE | , Start: . Finish: | 1- | -27-99 -27-99 | _ GROUI | ND ELEVATION 177.25 ND WATER ELEVATION 166.51 |
| CASINI SAMPL DIAMC | ER O.D. 2" NO BII SIZE | NQ. | _ ID | w | eight Side u | OF HAM ENGTH C | IMÉR OF SAMP | 300 LER | 0-14 24 | LBS. _ INL C | HAMMER FALL ASING _24" SAMPLER30" | |
| - 0 | Casing Blows Per foot | SAMPLE NUMBER | SAMPLE DEP FLEV FEE | THS 0 | RECOVERY | | BLOWS ON SAI | _ | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| | | | | | | | | | | | | TIGHT. (3-65) ROCK QUALITY IM- PROVES BELOW 22.5'. MODERATELY CLOSE JOINT SPACING. (2-65) |
| - 10 - | | | | | | | | | | | | END OF HOLE 25' |
| -20 | | | | | | | | | | | | |
| - 30 | | | | | | | | | | | | |
| | | | | | | | | | | | | - |
| -40 | Engineer: | | | | | | | | <u> </u> | EYNOLD! | a petr | SPAI |
| | ng Inspecto | ×: | | | _ | | Dr | lier: | - | LVRO L | | |
| | g - 40000 | | | | | | — не | nper: _ | | | | |

WGI Warren George Inc.

| SEET | ک من ب |
|------------|--------------|
| OCATION. | BRONX, OFNY |
| OUE NO | MG-B42-99 |
| | N:322,831.98 |
| INE & SIA. | E:625,338.22 |
| OFFSET | |

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| | Obt | '' | H. CASING OUI E ALL CASING OUI DATE . I.D | MERCHI | ~ | LIGHT | DATE FINSH: 2- MER 300-140 F SAMPLER 24 | | | _ GROOM | HAMMER FALL SING 24" SAMPLER 30" |
|------|-----------------------------|----------------|---|-------------|-------|-------|---|---------|---------------------------|-----------------|---|
| МОН | ND ON SAZE | | | | | BLOWS | | | DENSITY | PROFILE | |
| | CASING BLOWS PER FCOT | SAMPLE | SAMPLE DEPIHS ELEV : FEET | SAMPLE | | ON SA | | 16 - 24 | OR CONSIST MOISTURE | CHANGE DEPTH | RELD IDENTIFICATION OF SOIL |
| ' 🕇 | | SS1 | 0'-2' | 18" | 3 | 3 | 3 | 3 | | 0,- | TOPSOIL (3"). DARK BROWN SILT WITH SAND, ORGANIC |
| | | Madedoka en Ma | 2'-4' | 18" | | 6 | 5 | 5 | | 6' | MATTÉR IN TOP 2 FEET. FIRM TO STIFF. (ML)(11-65) |
| | | | 4'-6' 6'-8' | 18" | 32 | 33 | 7 40 | 38 | | <u> </u> | YELLOW BROWN SILTY |
| 10 - | | SS5 | B'-10' | 18" | 27 | 28 | 30 | 32 | - | | SAND, TRACE TO SOM GRAVEL. VERY DENSE (SM) (6-65) |
| | | <u>\$56</u> | 10'-12' | 16" | 23 | 85 | 27 | 28 | 1 | | |
| | | | | | | | | | | 15' | |
| | | R1 | 15'-17' | 0% | REC | 1000 | | | - - - | | GNEISS. LIGHT TO MEDIUM GRAY. WEATHERED TO 19'. |
| 20 | | R2 | 17'-21.5' | | REC | | | | <u> </u> | | OXIDATION ON JOINT |
| | | - P3 | 21.5'-26.5' | 96 | Z REC | | | | | | SOFT, WEATHERED, FRACTURED FROM 15 TO 17', OXIDIZED. FOLIATION AT 40 |
| | | | 20.5 | | RQI | + | | | | | DEGREES. (4-65) FROM 15.3' TO 15. |
| - 30 | | | | | | | | | | | A SUBVERTICAL JOINT, DXIDIZED, FRIABLE, SOFT. |
| | | R4 | 26.5*-34* | | % RE | | | | | | ROCK QUALITY IM- PROVES AT 17'. FROM 17' TO 25'. |
| | | | | - | | | | + | | | MODERATELY HARD THARD, CLOSE TO MODERATELY CLOSE |
| _4 | , 🗀 | | | | 1 | 1_ | 1 | | | MORIER | JDINT SPACING. |

DOD TOCATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | 2 of 3 |
|------------|----------------|
| LOCATION | BRONX, NY |
| HOLE NO _ | MG-842-99 |
| LINE & SIA | N: 322, 831.98 |
| CINC & SIM | E:625,338.22 |

| | L.9° | 9018 | | FOR: 1 | TETCAL | F&EI | -ץסכ | HAZE | 4 AN | — D SAWYI | ER | |
|--------------|-------------------------------------|-------------|--|--------|--------|------------|------------------|-------------------------|-----------------------------------|--------------------------|---------------|--|
| | | | I II CA | | | | | | | -11-99 -16-99 | Gi | ROUND ELEVARION 174.93 ROUND WATER ELEVARION 170.48 3 24139 |
| SAMPL | S OD HW ER O.D.2" NO BIT SIZE | | _ ro | | WEIGH! | OF HAM | AMER _ OF SAM | 300 PLER | HAMMER FALL CASING 24" SAMPLER30" | | | |
| | CASING BLOWS FER FOOI | SAMPLE | SAMPLE : | | SAMPLE | | ON \$4 | PER 6 | | DENSITY OR CONSIST | PROFI CHAN | GE FELD IDENTIFICATION |
| - 0 - | | | | | ~~ | 0.6 | ♦ ·12 | 12 · 18 | 18 24 | MOISTURE | | |
| 40 | | RS | 34'-42' | | | REC ROD | | | | - | | FOLIATION AT 40 TO 60 DEGREES. SOME SUBHORIZONTAL AND FOLIATION JOINTS, |
| | | | | | | | | | | | | OXIDIZED. A SMOOTH FOLIATION JOINT AT 60 DEGREES, OXIDIZED, AT 19.8° |
| 50 - 18 - | <u> </u> | | | | - | | | | | | | ROCK. (2-65) |
| | | R6 | 42' -52' | | | REC | | | | 1 | | FROM 25' TO 34', CLOSE JOINT SPACING. FOLIATION |
| | | | | | | | | | | | | AT 60 AND 70 DE- GREES. 60 AND 70- DEGREE JOINTS |
| 60 20 | | R7 | 52'-60' | | | REC | | | | | 60 | |
| | | | | | 70% | ROI | | | | -{ | | SECTED BY 30 AND 4 -DEGREE JOINTS. SMOOTH 70 AND 60- DEGREE JOINTS, |
| | | | | | | | | | | | | OXIDIZED, AT 33.57 (ACROSS FOLIATION) AND 33.87(FOLIATION) JOINT). (3-65) |
| 70 -30 | | | | | | | | | | | | FROM 34' TO 55', CLOSE TO MODERATEL CLOSE JOINT |
| | | | | | | | | | | | | SPACING. FROM 34'1 34.5', A ROUGH FOLIATION JOINT A |
| | | | | | 1 | | | | | <u>-</u> | | 70 DEGREES, ALTER- ATION IN EPIDOTE |
| 80 | | - | | | | | | + | | | | BELOW 56', SUB- |
| Soil | Engineer; | | | | _ | <u> </u> | <u> </u> | | | ESAR N | 10RIE | <u> </u> |
| | | | | | | | | Oriller: _ Helper: _ | | IIKE KE | 100 100 1 | |
| _ | | | | | | | | E | | | | _ |

Warren George Inc.

SUBSURFACE EXPLORATION

BRONX, OF NY
LOCATION MG-842-99
HOLE NO N: 322, 831. 98
OFFSEI E: 625, 338. 22 OFFSET _

| | | 9018 | FOR: | IE TUR | Lr&EL | י-ץענ | HAZE | A HIN | D SAWY | ER | | |
|---------------|-----------------------------|--------|------------------------------|--------|--------|-------|----------------------------|---------|--------------------------------------|----------------------------|---|--|
| ASM AMPL | cop HW | | H CASING OUF DATE | WEIGHI | OF HAM | IMER | 300 | 0-14 | 0 | LRS. | GROUND ELEVATION 174.93 GROUND WATER ELEVATION 3124193 HAMMER FALL CASING 24" SAMPLER 30" | |
| CHARK | NO BIT SIZE | 1405 | | | | | * | | | | | |
| 0 - | CASING BLOWS FER FOOI | SAMPLE | SAMPLE DEPTHS ELEV 1 FEET | SAMPLE | ļ | ON SA | PER 6" MPLER 12 - 18 | 18 · 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPIH | DELCH IDENTIFICATION | |
| - 10 - | | | | | | | | | | | AND CLOSE TO MODERATELY CLOSE JOINT SPACING. FROM 52.2'TO 55.8', A SMOOTH FOLIATION JOINTS AT 60 DE-GREES. (2-65) END OF HOLE 60' ORIENTED CORE FROM 25' TO 60'. WATER PRESSURE TESTS IN ROCK FROM | |
| - 20 - | | | | | | | | | | | 15' TO 60'. PIEZOMETER INSTALLED AT 52'. | |
| -30 | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Soil | Engineer: | | | | | 0 | riller: _ | C | ESAR M | ORIER | <u>A</u> | |
| Drilli | ng inspeck | ж: | | | | н | elper: _ | М | IKE KE | LLY | | |

WGI Warren George Inc.

| ₽1EE1 | or |
|-----------|----------------|
| CCATICIT | BRONX, NY |
| ICLE NO _ | MG-843-99 |
| DE & SIA | N: 322, 918.19 |
| | E:625,351.04 |
| OFFSE! | |

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| BLC | SS | SAMPLE DEPTHS ELTV - FEET 0'-2' 2'-4' 4'-6' | SAMPLE SAMPLE | 0.0 | BLOWS ON SA | | | DENSITY OR | PROFILE | |
|-----|-----|---|------------------|-------------------|----------------|---------|----------|----------------------|-----------------|---|
| | SS | 21-41 | | 3 | | 12 · 18 | 16 - 24 | CONSIST. MOISTURE | CHANGE DEPIH | FIELD IDENTIFICATION OF SOIL |
| , | SS: | | 4.50 | | 3 | 4 | 4 | • | 01- 21 | TOPSOIL (3"). DAR BROWN SILTY SAND, ORGANIC MATTER. |
| , | | | 8" | 14 | 8 20 | 7 | 20 | | 4' | DARK BROWN SILT |
| , = | | 161-81 | | | 16 | 17 | 17 | | | WITH SAND. STIFF. (ML) (11-65) RUSTY BROWN SILTY |
| 1 | | 58'-10' | 3" | 100 | /3" | | | | 11, | GRAVEL, COBBLES. (SP-SM AND GP-GM) |
| | | 712'-14' | 6" | 17 | 20 | 45 | 45 | | | (6-65) YELLOW BROWN SILT |
| | SS | 14'-16' | 8" | 21 | 15 19 | 33 | 15 45 | • | 1 | F-M SAND, WITH GRAVEL, MICA, ROC FRAGMENTS(GNEISS) |
| | | 316'-17' | 2" | 100 | /2" | | | , | 17' | COBBLES. DENSE TO VERY DENSE. POSSIBLE SAPROLIT |
| •= | | | | | | | | | | SOIL (DECOMPOSED) |
| | | | | | | | | | | (6-65/5-65) GNEISS. MEDIUM GRAY. SLIGHTLY |
| | P1 | 17.5'-27.5' | 907 | REC | | | | | | SCHISTOSE FROM 35 |
| | | | | ROD | | | | | | FROM 50 DEGREES TO SUBVERTICAL. QUAR BAND FROM 47' TO |
| 10 | | | | | | | - | | | 48'. OXIDATION ON JOINTS TO 45.5'. FROM 22' TO 23.8' |
| | | | | | | | | | | A SUBVERTICAL FOLIATION JOINT, |
| | R2 | 27.5'-37.5' | 98% | REC | | | | | | OXIDIZED, SMOOTH OPEN WITH FOUR 10 DEGREE JOINTS |
| | R3 | 37_5'-40_5' | 967 | ROD REC ROD | | - | _ | - | | ACROSS FOLIATION ROUGH, OPEN. |

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MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

Warren George Inc. SUBSURFACE EXPLORATION

| | | 11 CASING OUI | | | | | | -28-99 -29-99 | GR | OUND ELEVATION 174.84 OUND WATER ELEVATION 169.62 |
|---|------------------|----------------------------|--------------------|-------------------|---------|------|-------------|---------------------------------------|--------------------------|--|
| ASING OD HW MPLER O.D 2" AMOND BIT SIZE | | 1D | WEIGHT INSIDE L | of Ham Engih o | MER | |)-14(24 | 0 | LB\$ | HAMMER FALL CASING 24" SAMPLER30" |
| CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE DEPIHS ELEV FEET | SAMPLE | | BLOWS P | PLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFII CHANG DEPIG | GE FIELD IDENTIFICATION |
| 50 50 50 50 50 50 50 50 50 50 50 50 50 5 | R5 | 40.5'-50.5' 50.5'-56' | 100 | RECCROD | REC | | | gus su | 56 | FROM 24.5' TO 25.2' AND 25.4' TO 26.25', TWO SUB- VERTICAL FOLIATION JOINTS, SMOOTH, TIGHT. FROM 31' TO 32.5', FRACTURED ZONE, SOFT, FRIABLE. FROM 30.6' TO 31.1' AN 80-DEGREE FOLIATION JOINT, ROUGH, OPEN. FROM 32' TO 32.5', A 70-DEGREE JOINT ACROSS FOLIATION, OXIDIZED, ROUGH. FROM 33.75' TO 34.1', A 70-DEGREI FOLIATION JOINT, OXIDIZED, SMOOTH, TIGHT. FROM 34.1'TO 34.8 A 70-DEGREE JOINT ACROSS FOLIATION, OXIDIZED, ROUGH, WITH A 10-DEGREE JOINT ACROSS FOLI TION, ROUGH, TIGH ROCK QUARTZITE IM PROVES FROM 35' T 38.2' CLOSELY JOINTED FROM 38.2 TO 42.1' FROM 38.2' TO 38.9' A FOLIATION JOINT, OXIDIZED, SMOOTH, TIGHT WITH A 10-I GREE JOINT ACROSS |

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WGI Warren George Inc.

| I SHEET | <u>, o</u> of 3 |
|------------|-----------------|
| LOCATION. | BRONX, NY |
| HOLE NO. | MI - D 40 00 |
| LINE & STA | N: 322, 918.19 |
| OFF OF SIM | E:625,351.04 |

| | L.9 | 9018 | | FOR: M | IETCAL | .F&EI | DY-I | HAZEI | N ANI | SAWY | ER | |
|-------------------|--|---------|----------|----------------------|--------------------|-------------------|-------------------|----------------------|-------------|--------------------------------------|----------------------------|---|
| 21 P101 21 P16 | | fl | L II CA | SING OUI OUI DAIE | DAIE | | DAIE | . SIARI; . Finish | | -28-99 -29-99 | GROU | IND ELEVATION 174.84 IND WATER ELEVATION 169.62 |
| SAMPL | 3 OD <u>HW</u> ER O.U <u>2"</u> IND BII SIZE | | _ ID | | WEIGHT INSIDE L | of Har Engih (| MMER _ Of SAMI | 304 TER | 0-140 24 |) | _ LBS. IN. C | HAMMER FALL CASING 24" SAMPLE 30" |
| - 0 | CASING BLOWS PER FOOT | SAMPLE | SAMPLE (| | SAMPLE | 0.6 | BLOWS ON SA | | 18 - 24 | DENSITY OR COMSIST MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| | | | | | | | | | | | | FOLIATION, ROUGH. FOLIATION JOINTS BELOW 41' ARE SMOOTH, TIGHT. IN GENERAL GOOD |
| - 10 - | | | | | | | | | | | | ROCK FROM 17' TO 42.1'. (2-65) ROCK QUALITY IM- PROVES BELOW 42.1' (1-65) |
| | | | | | | | | | | | | END OF HOLE 56' |
| -20 · | | | | | | | | | | | | |
| | | | | - | | | | | | | | |
| -30 | | | | | | | | | | | | |
| | | | | | | | | | | | · | |
| -40 Sou | Engineer: | <u></u> | | | <u> </u> | _1 | | 1 | | US SUR | er e | |
| | engineer: ing Inspect | | | | | | 8 - 37. | riller: _ | | TEVEN | | EKE |
| | | | | | | | | elper: . | = | | | |

FACO FOCUSION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET 1 OF 3
LOCATION BRUNX, NY
HOLE NO. MG-B44-99
LINE & SIA N: 323, 014.73
OFFSET E: 625, 391.41

| | L. 91 | 8105 | | FOR: | METCAL | .F&ED | DY-H | HAZE | N AN | D SAWY | ER | |
|--------------------------|--|------------------|---------------------|----------|--------------------|------------|--------------------------|---------|---------|--------------------------------------|----------------------------|--|
| DE PIH | | FI | H CA | JIAO IUO | | | DATE | START. | | -4-99 -5-99 | | OUND ELEVATION 174.13 |
| CASINA SAMPL DIAMO | ER OD <mark>HW</mark> ER OD <mark>2"</mark> IND BIT SIZE | NQ | _ 10 _ 1D | | WEKSHI INSIDE U | | | | | | HAMMER FALL CASING SAMPLER | |
| -0- | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE (C ELEV / | 150 | SAMPLE RECOVERY | | BLOWS ON SAI 6 -12 | MPLER | 18 · 24 | DENSITY OR CONSIST MOISTURE | PROFILI CHANG DEPIH | FIELD IDENTIFICATION |
| -10 - -20 - | | | 19'-22' | | 99% | REC ROD | | | | | 197 | ANGLED BOREHOLE DIRECTION: N 82 DEGREES W ANGLE: 60 DEGREE ROLLER BIT TO TOP OF ROCK NOTE: ALL DEPTHS SHOWN AS "DOWN-HOLE" OR NON-VERTICAL GNEISS. LIGHT TO MEDIUM GRAY, SCHISTOSE. FOLIATION AT 30 DE- GREES TO SUB- VERTICAL. OXIDATION ON JOINTS TO 25'. CLOSE JOINT SPACING TO 21'. (3-65) MODERATELY CLOSE SPACING FROM 21' TO 96.25'. ROUGH FOLIATION JOINTS PREDOMINATE FROM 19' TO 22' AND BELOW 72'. |
| | Engineer: | | | | | | | ller: _ | | REG MA | RNEY | |
| Dritt | ng inspecto | h | | | | | Не | lper: _ | G | REG WI | LLIA | <u> 18</u> |

JUB LUK MIKIN:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SHEET Z 3
LOCATION BRONX, NY
HOLE NO MG-844-99
INL & SIA N: 323, 014.73
LNL & SIA E: 625, 391.41

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| ## ## ## ## ## ## ## ## ## ## ## ## ## | AMPL | G OD HW ER O.D. 2" OND BIT SIZE | | 1.0 | 100000000000000000000000000000000000000 | WEIGHT OF HAMMERLBS. HAMMER' FA INSIDE LENGTH OF SAMPLERIN. CASING SAMPLE | | | | | | | | | |
|--|------|---------------------------------------|----------------|------------|---|---|----------|---------|--------|----|------|--|--|--|--|
| GENERALLY SMOOTH 40 R3 32'-42' 99% REC 96% RGD FOLIATION JOINT FROM 32' TO 72' A 50-DEGREE JOIN ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATION BUBYERTICAL JOIN WITH FOLIATION TREND, WITH 20- GREE JOINT ACRO FOLIATION, TIGH ROUGH. CLOSELY TO MODERATELY JOIN FROM 96. 25' TO 100.9'. MODERATELY ACROSS FOLIATIO TO 98.25', A SMOOTH BO-DEGREE JOINT ACROSS FOLIATIO TO 98.25', A SMOOTH ACROSS FOLIATIO TIGHT, WITH FOLIATION TIGHT, WITH FOLIATION TIGHT, WITH FOLIATION ACROSS FOLIATIO TO 98.25', A SMOOTH ACROSS FOLIATIO TO 98.25', A SMOOTH ACROSS FOLIATIO TO 98.25', A SMOOTH ACROSS FOLIATIO TO 98.25', A SMOOTH ACROSS FOLIATIO TO 98.25', A SMOOTH ACROSS FOLIATIO TO 98.25', A SMOOTH ACROSS FOLIATIO TO 98.25', A SMOOTH ACROSS FOLIATION TO 98.25', A SMOOTH ACROSS FOLIATION TO 98.25', A SMOOTH ACROSS FOLIATION TO 98.5', TO 990'S RGD ACROSS FOLIATION TO 98.5', TO 990'S RGD ACROSS FOLIATION TO 990'S RGD AC | | 8LOWS | AMPLE JMBER | 20 20 10 - | LOVERY | | | | | OR | | GE FIELD IDENTIFICATION | | | |
| GENERALLY SMOOT 962 ROD 962 ROD R3 32'-42' 962 ROD R5 50 FRIAD 32' TO 72' A 50-DEGREE JOIN ACROSS FOLIATIO B7.5' AT 93.8', A SUB VERTICAL FOLIAT JOINT, ROUGH, W A 10-DEGREE JOIN ACROSS FOLIATIO R04 42'-52' 997 REC R5 52'-52' 997 REC R5 52'-62' 997 REC R5 52'-62' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R6 62'-72' 997 REC R7 GUBH, ACROSS FOLIATIO ACROSS FOLIATIO ACROSS FOLIATIO TIGHT, WITH FOLIATION ACROSS FOLIATIO TIGHT, WITH FOLIATION ACROSS FOLIATIO TIGHT, WITH FOLIATION ACROSS FOLIATIO TIGHT, WITH FOLIATION ACROSS FOLIATIO TO DEGREE JOIN ACROSS FOLIATIO TIGHT, WITH FOLIATION ACROSS FOLIATIO TIGHT, WITH FOLIATION ACROSS FOLIATIO TIGHT, WITH FOLIATION TIGHT, WITH FOLIATION TO DEGREE JOIN ACROSS FOLIATIO TO DEGREE JOIN TO DEG | 0 | PER FOOI | ΝŽ | | 3 2 | 0 6 | o -12 12 | - 18 18 | 3 - 24 | | DEPT | H OF SQIL | | | |
| 87.5'. AT 93.8', A SUB VERTICAL FOLIATI JOINT, ROUGH, W A 10-DEGREE JOI ACROSS FOLIATION R04 42'-52'. 99% REC. R05.7', A SMOOT SUBVERTICAL JOIN HITH FOLIATION TREND, WITH 20- GREE JOINT ACRO FOLIATION, TIGH R0UGH. CLOSELY TO MODERATELY JOIN FROM 96.25' TO 98.25', A SMOOT CLOSE JOINT SPE BELOW 100.9'. FROM 96.25' TO 98.25', A SMOOT SUBVERTICAL JOIN FROM 96.25' TO 98.25', A SMOOT TO R6 52'-72'. 99% REC. R6 52'-72'. 99% REC. R7 99% REC. R8 52'-72'. 99% REC. R8 52'-72'. 99% REC. R9 90% ROD R8 52' TO 98.25', A SMOOT R9 90% ROD R8 52'-72'. 99% REC. R9 10-DEGREE JOINT ACROSS FOLIATION ACROSS FOLIATION TIGHT, WITH FOL ACROSS FOLIATION ACROSS FOLIATION ACROSS FOLIATION FOLIATION JOIN FROM 98.5' TO SUBVERTICAL FOLIATION JOIN FROM 98.5' TO FROM 98.5' TO FROM 98.5' TO | | | R3 | 32'-42' | | | | | | | | GENERALLY SMOOTH FOLIATION JOINTS FROM 32' TO 72'. A 50-DEGREE JOINT | | | |
| 10 | 50 | | | | | | | | | ٠ | | 87.5'. AT 93.8', A SUB- VERTICAL FOLIATION | | | |
| 95.75', A SMOOT SUBVERTICAL JOI WITH FOLIATION TREND, WITH 20- GREE JOINT ACRO GREE JOINT ACRO FOLIATION, TIGH ROUGH. CLOSELY TO MODERATELY JOIN FROM 96.25' TO 100.9'. MODERAT CLOSE JOINT SPA BELOW 100.9'. FROM 96.25' TO 98.25', A SMOOT 80-DEGREE JOINT ACROSS FOLIATIO TIGHT, WITH FOU 10-DEGREE JOINT ACROSS FOLIATIO ROUGH, TIGHT. A SUBVERTICAL FOLIATION JOIN FROM 98.5' TO | | | R4 | 42'-52' | | | | | | | | A 10-DEGREE JOINT ACROSS FOLIATION, ROUGH, TIGHT. | | | |
| GREE JOINT ACRO FOLIATION, TIGH ROUGH. CLOSELY TO MODERATELY JOIN FROM 96.25' TO 100.9'. MODERAT CLOSE JOINT SPA BELOW 100.9'. FROM 96.25' TO 98.25', A SMOOT SO-DEGREE JOINT ACROSS FOLIATIO TIGHT, WITH FOU 10-DEGREE JOINT ACROSS FOLIATIO ROUGH, TIGHT. A SUBVERTICAL FOLIATION JOINT FROM 98.5' TO | | | | | 78% | RQD | - | | | | | 95.75', A SMOOTH SUBVERTICAL JOINT WITH FOLIATION | | | |
| R5 52'-62' 997 REC MODERATELY JOIN FROM 96.25' TO 100.9'. MODERAT CLOSE JOINT SPA BELOW 100.9'. FROM 96.25' TO 98.25', A SMOOT 80-DEGREE JOINT ACROSS FOLIATION TIGHT, WITH FOUR ACROSS FOLIATION ACROSS FOLIATION ACROSS FOLIATION ACROSS FOLIATION ACROSS FOLIATION ACROSS FOLIATION ACROSS FOLIATION JOINT FROM 98.5' TO 10-DEGREE JOINT ACROSS FOLIATION J | | | | | | | | | | | | GREE JOINT ACROSS FOLIATION, TIGHT, ROUGH. | | | |
| BELOW 100.9'. FROM 96.25' TO 98.25', A SMOOT 80-DEGREE JDINT ACROSS FOLIATIO TIGHT, WITH FOU 10-DEGREE JOINT ACROSS FOLIATIO ROUGH, TIGHT. A SUBVERTICAL FOLIATION JOINT FROM 98.5' TO | | | R5 | 52'-62' | | | | | | | | MODERATELY JOINT FROM 96.25' TO 100.9'. MODERATE | | | |
| R6 62'-72' 99% REC 10-DEGREE JOINT ACROSS FOLIATION TIGHT, WITH FOUNT ACROSS FOLIATION ROUGH, TIGHT. A SUBVERTICAL FOLIATION JOINT FROM 98.5' TO | | | | | | | | | | | | BELOW 100.9'. | | | |
| 90% RQD ACROSS FOLIATION ROUGH, TIGHT. A SUBVERTICAL FOLIATION JOIN FROM 98.5' TO | | - | P.C. | 621-721 | 903 | DEC | | | | | | 80-DEGREE JOINT ACROSS FOLIATION TIGHT, WITH FOUR | | | |
| | | | | | | | | | | | | ACROSS FOLIATION ROUGH, TIGHT. | | | |
| -40 | | | + | | | | | | | - | | FROM 98.5' TO 99 | | | |

WGI Warren George Inc.

| I SHEET | OF3 | |
|------------|----------------|---|
| LOCATION. | BRONX, NY | - |
| HOLE NO. | MG-844-99 | _ |
| LINE & STA | N: 323, 014.73 | — |
| LINE & SIA | E:625.391.41 | _ |

L.99018

FOR METCALF&EDDY~HAZEN AND SAWYER

| CASING OD HW ID WEIGHT OF H. SAMPLER O.D.Z ^M I.D INSIDE LENGTH CASING BLOWS PER FOOT S W N N N N N N N N N N N N N N N N N N | BLOW ON S | | | | | HAMMER FALL CASING SAMPLER |
|--|---------------|----------------|--------------|----------------|-------------|------------------------------------|
| CASING BLOWS PER FOOI S BLEV / FRET D - 6 | ON S | AMPLER | | DENSITY | | |
| 0 0.6 | | 12 - 18 | | OR CONSIST. | PROFILE | FIELD IDENTIFICATION |
| | | | 18 - 24 | MOISTURE | DEPIH | |
| 80 R7 72'-82' 99% RE | | | | | n n —na 262 | THE OCHERAL THE |
| 93% RC | | | Color circ | | | IN GENERAL, THE ROCK IS GOOD BELOW |
| | | | | | | 21'. (1-65) |
| | 1 | ļ | | | | |
| | + | | _ | | | |
| | + | +- | | 61 | | ļ |
| 90 | + | 1 | | | Ì | |
| -10 | | | | 1 | | ļ |
| R8 B2'-92' 99% RF | _ | — | | | | |
| R8 82'-92' 99% RE 98% RQ | | | | | [| |
| 38% KU | 4 | ╅╼┈ | | | | |
| | | T | | i | | |
| | | | | | • | l |
| | | | | 1 | l | |
| 100 | | _ | | 1 | | |
| | + | + | _ | 1 | ł | |
| -20 - | | + | | 1 | | |
| R9 92'-102' 99% RE | | | | 1 | | |
| 73% RG | D | | ļ | 1 | | 1 |
| R10102'-105' 99% RE | - | + | | | | |
| 99% RG | | - 10 | 1 | - | 105 | · |
| 1 22/6/33 | | † | 1- | 1 | ł | |
| | | | | 1 | | END OF HOLE 105' |
| 110 | - | | | 1 | 1 | _ |
| -30 | +- | + | - | 4 | 1 | * |
| | + | +- | +- | 1 | ľ | |
| | | | | 1 | ŀ | |
| | | | |] | | |
| | | 1 | | 4 | | |
| | | +- | - | 4 | 1 | |
| | +- | + | + | - | f | |
| 120 | | + | - | 1 | | |
| 40 | | | 1 | 1 | | |
| Soil Engineer; | 1 | Orliler: | G | REG MA | RNEY | |
| Orliling Inspector: | | Helper: . | G | REG WI | LLIA | 4S |

FUCU ECCHION.

MOSHOLU BOLF COURSE VAN CORTLANDT PARK CONTRACT HED 543

Warren George Inc. SUBSURFACE EXPLORATION

SHEET OF 2
LOCATICEL BRONX, NY
HOLE NO N: 323, 116.78
OFFSEL E: 625, 374.89 SHEET _

| | L.9 | 301B | | FOR: | METCAL | F&EI | DDY- | HAZE | N AN | D SAWYI | ER | |
|-----------------------|------------------------------------|------------------|----------------|----------|--------------------|-------------------|-----------------|----------------------|------------------|-----------------------------------|----------------------------|--|
| HIP | | !! | H. CA | OU! DAIE | DAIF | | DATE | . SIARI: , FINISH | | -8-99 -10-99 | GROU | IND ELEVATION 176.79 IND WATER ELEVATION 168.24 |
| ASINK AMPL IAMC | S OD HW ER OD 2" XMD 811 972 | NQ | _ ID | | WEIGHI INSIDE U | of Haw Engih C | MMER OF SAMI | 30 7.68 | . 185 _ IN. C | HAMMER FALL CASING 24" SAMPLER30" | | |
| | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE I | | SAMPLE | 0.6 | BLOWS ON SA | | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEFIH | FIELD IDENTIFICATION OF SOIL |
| 0 - | | SS1 | 0'-2' | | 18" | 12 | 14 | 15 | 17 | | 0'- 2' | TOPSOIL(3). DARK GRAY SILT WITH SAND, ORGANIC |
| | | | 2'-4! | | 18" | | 5 | 5 | 6 | | 4' | MATTER. (ML) (11-65 RUSTY BROWN SILTY |
| | | | 4'-6' 6'-8' | | 18" | 10 | 11 | 9 | 11 | | 6' | FINE SAND. (SM) (7-65) DARK GRAY SILT WI |
| 10 - | | SSE | 8'-8.1' 10' | | NR NR | 100 | /1" | | | | | FINE SAND.(ML) (11-65) |
| | | | | | | | - | | <u> </u> | | 8' | YELLOW BROWN SILT F-M SAND. MEDIUM DENSE.(SM) (7-65) |
| | | | | | | | | | | | 14.5 | POSSIBLE SAPROLIT SOIL. BOULDERS. DENSE. (SM AND GM |
| | | | | | | | | | | | | (6-65/5-65) |
| 20 - | | | 14.5'-1 | | 817 | REC ROD REC | | | | - | | GNEISS. MEDIUM GRAY. SLIGHTLY WEATHERED TO UN- |
| | | R3 | 21.5'-2 | 22.51 | 987 687 | | | | | | , | WEATHERED. FOLIATION FROM 60 TO 80 DEGREES. |
| | | | | | - 00/ | | | | | | | DXIDATION ON JOIN TO 20.5', AT 38' |
| | | | | | | | | | +- | | | AND 49.5'. A 70 DEGREE FOLIATION JOINT, |
| -30 | - | D/ | 22.5!- | 22 51 | 06 | REC | | | ļ | | | OXIDIZED, FROM 16 |
| | | | 72.3 | 32.3' | | RQI | | | | 1 | | JOINTED FROM 16' 18.5', 31.6' TO 38', 45' TO 50'. |
| | | | | | | | = | +- | - | - | | MODERATELY CLOSE JOINT SPACING IN THE REST OF THE |
| | | | | | | | | | | | | CORE. (2-65/1-65 |
| - 40 Soil | Engineer: | | | | - | | | riller: | | ESAR M | ORIER | |
| | ng Inspecto | | | | | | | _ | N. | IIKE KE | LLY | |
| | | | | | 10 1070 | | | | | | | and the second s |

JUB CULATION

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED 543

WGI Warren George Inc.

| SHEET | ² or ² |
|------------|------------------------------|
| LOCATION_ | BRONX, OF NY |
| HOLE NO. | MG-845-99 |
| LINE & STA | N: 323, 116.78 |
| Ottati | E:625,374.89 |

| AMPLER (NAMOND) | OD HW OU 2" BIT SIZE RASING BLOWS IR FOOT | SAMPLE DA | SAMPLE DEPIRS ELEV FEET | SAMPLE RECOVERY *GIS | | MER | PER 6 | 0-14 24 | T | | 3 24 99 HAMMER FALL ASING _24" SAMPLER30" |
|-----------------|--|-----------|-------------------------|-------------------------|------------|--------|-----------|------------|---------|----------------------------|---|
| o BI | NOWS | | ELEV FEET | | | | | | DENGILA | 7 | |
| | | R5 | 32.5'-42,5' | 00.4 | | ا 12 ه | | 18 - 24 | - CO | PROFILE CHANGE DEPIH | FIELD IDENTIFICATION OF SOIL |
| - | | | | | REC ROD | | | | | | |
| 50 | | | | | | | | | · | | |
| -10 | | R6 | 42.5'-50' | | REC ROD | | | | | | |
| | | R7 | 501-551 | 997 | REC | | | · | | 55' | END OF HOLE 55' |
| 60 | | | | | | | | | | | DRIENTED CORE FROM |
| | | | | | | | | | | ÷ | WATER PRESSURE TESTS IN ROCK FROM 15' TO 55'. |
| 70 | | | | | | | | | | | PIEZOMETER INSTALLED AT 53'. |
| -30 | | | | | | | | | | | |
| | | | | | | | | | | | |
| BO -40 - | | | | | | | | | | | |
| Soil En | ngineer: | | | | | ם | riller: _ | C | ESAR M | ORIER | Α |

PHOLINATE ONE

MOSHOLU GOLF COURSE VAN CORTANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | 1 of 2 |
|------------|----------------|
| LOCATION_ | BRONX, NY |
| HOLE NO. | MG-846-99 |
| LINE & SIA | N: 323, 215.85 |
| | E:625,387.39 |
| OFFSET | |

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| SING | OD HW 2 O.D. 2" | | ALI CASING OUI DATE | WEIGHT | OF HAME | MED. | 300 | -140 | 0 | 185 | HAMMER FALL ASING 24" SAMPLER 30" |
|------|-----------------------------|--------|--|------------------|---------------|-------------------|-----------|---------|--------------------------------------|----------------------------|---|
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV / FEET | SAMPLE | | BLOWS P ON SAM | PLER | 18 · 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | RELD (DENTIFICATION OF SOIL |
| , - | | | 0' -2' 2' -4' | 8" | 8 7 | 8 | 9 | 14 | | 0'- 2' | TOPSOIL (1.5"). DARK GRAY SILTY SAND, ORGANIC MATTER. MEDIUM DENSE.(SM) (11-65) |
| 10 - | | | 4'-6' 6'-7' | 2" | 38 28 | 56 100 | 69 /3" | 100 | | 6' | RUSTY BROWN SILTY FINE SAND, TRACE GRAVEL, COBBLES (SM) (6-65) |
| | | R2 | 7.5'-12.5' 12.5'-13.5' 13.5'-14' | 177 507 6" | REC | BOL BOL /6" | | | - | 14' | YELLOW BROWN SILTY F-M SAND, MICA, ROCK FRAGMENTS (GNIESS), COBBLES AND BOULDERS. POSSIBLE SAPROLITI |
| -20 | | R3 | 15.5'-20' | | 0 % % RQI | REC | | | | | GNEISS. MEDIUM GRAY. QUARTZITIC |
| | | | | | - | | | | | | FROM 39' TO 45', 48' TO 50'. FOLIATION AT 70 DEGREES TO SUB- VERTICAL. OXIDATI ON JOINTS UP TO 37.5'. |
| -30 | | R4 | 20'-30' | | RE RO | | | | | | FROM 15.75' TO 16.5', A 70-DEGRE FOLIATION JOINT, SLIGHTLY OXIDIZED SMOOTH. FROM 22.8'TO 24.3 |
| | | R | 5 30' -40' | | 00 % 62 RI | | d | | | | AN 80-DEGREE FOLIATION JOINT, OXIDIZED, ROUGH. |
| | i Engineer: | | 97 6 9 999 | | | | oriller: | | GUS SL | JR I | |

SOU INCOME

MOSHOLU GOLF COURSE VAN CORTANDT PARK CONTRACT HED-543

Warren George Inc.

SUBSURFACE EXPLORATION

HEEF BRUNX, OF NY
LOCATION MG-846-99
HOLE NO. N: 323, 215.85
LINE & STA. E: 625, 387.39 SHEET OFFSET ___

| - | L.9 | 9018 | | FOR: | METCA | LF&E | DDY- | HAZE | N AN | D SAWY | ER | | |
|-----------|---|------------------|------------------|--|--------------------|-------------------|-------------|---------------|------------|---|--------------------------|---|-------------|
| DEPHI | | FI | . ALL CASING | asing out out date. | DAIE | | DAIE | . SIARI: | GR | ROUND ELEVATION 175.44 ROUND WATER ELEVATION 166.62 | | | |
| SAMPL | G OD HW ER O.D <mark>2"</mark> NO BIT SZE | | _ 10 | | WEIGHI INSIDE I | of Han Engih (| AMER _ | | 0-14 24 | | . 195 IN, | HAMMER FALL CASING 24" SAMPLER 30" | |
| | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE ELEV , | | SAMPLE | 0.6 | ON SA | PER 6" IMPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFIL CHANG DEPIH | PELD IDENTIFICATION OF SOIL | |
| - 0 - | | | - | | | | | | | | | | |
| 40 | | | | | | | | | | | | FROM 45' TO 48 SUBVERTICAL FOLIATION JOIN | Τ, |
| | | | | | | | | | | | | SMOOTH, FRIABLE SOFT, MUSCOVIT IN GENERAL GOO ROCK, MODERATE | E. D |
| 50 | | P.S | 40' -50' | | 100 | | REC | | | | 50' | JOINTED. (1-65) | |
| - 10 - | | - 50 | +0 30 | | 887 | | | | | | 20. | | |
| | | | | | | | | | | | | END OF HOLE 50 | • |
| | | | | | | | | | | | | ļ. | |
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| 60 | | <u> </u> | <u> </u> | | - - | - | | - | | - | | ļ. | |
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| -40 | · · · · · · · · · · · · · · · · · · · | | | | | | | | 1. | | | | |
| Soil | Engineer. | | | 10 2 11 1 | | | 0 | igjet: _ | G | ius sur | SI. | | |
| Driff | ing Inspecto | or: | | STATE OF THE STATE | | | н | lelper; . | | TEVEN | LUEI | DEKE | |

WGI Warren George Inc.

LOCARON BRONX, NY
HOLE NO N: 323, 321.30
UNE & SIA E: 625, 396.15

| | L.99 | 9018 | | FOR- | METCAL | .F&EI | DY-I | HAZEI | N ANI | D SAWYE | R | |
|--------|-------------------------------------|--|------------------|-------------|---------------------|-------------------|-------------------------|------------|------------|---------------------------------------|---------------------------|--|
| | | | L II CA | | | | | | | -25-99 -26-99 | GR | OUND BLEVATION 172.97 OUND WARP ELEVATION 163.05 |
| SAMPLI | GOD HW ER O.D Z" END BIT SIZE | | _ 1D | | WEIGHT INSIDE LI | of Han Engih (| AMER _ | 300 RER | 0-14 24 | 0 | LBS _ IN | HAMINED FALL CASING 24" SAMPLER 30" |
| - 0 - | Casing Blows Per foot | SAMPLE NUMBER | SAMPLE (ELEV | | SAMPLE | 0 6 | BLOWS ON SA 6 -12 | MPLER | 16 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILI CHANG CEPTH | FELD IDENTIFICATION |
| | | SSI | 01-21 | | 18" | 4 | 5 | 6 | 6 | | 2' | GRAY SILTY SAND, |
| | | SS2 | 2'-4' | | 18" | 10 | 10 | 6 | 7 | | | TRACE GRAVEL, ORGANIC MATTER. |
| | | \$53 | 4!-6' | | 12" | 18 | 32 | 56 | 100 | | _ | RUSTY BROWN SILTY F-M SAND, SOME |
| 3 | | S S4 | 6'-6.5' | | 5" | 100 | /5" | | | | | GRAVEL, COBBLES |
| - 10 - | | | | | | | | - | | | | MEDIUM DENSE TO VERY DENSE. |
| | | | 8'-13' | | 14% | REC | | | | | 13' | (SP-SM AND GP-GM) |
| | | 555 | 13'-13. | 5' | 3" | 100 | /3" | | | | | ROLLER BIT FROM 6.5' TO 8', FROM |
| Į. | | | | | | <u> </u> | | | | | 15' | |
| | <u> </u> | | 15' -20' | | - | | | | | 1 | *3 | F-M SAND, MICA, RBCK FRAGMENTS, |
| -20 - | | - KZ | 13'-20' | | | REC | | | <u> </u> | 1 | | COBBLES.VERY DENSE POSSIBLE SAPROLITI |
| | | | | | | | | | | 1 | | SDIL (DECOMPOSED ROCK).(SM AND GM) (6-65/5-65) |
| | | | | | | | | | - | 1 | 20' | |
| | | | | | | | | | _ | | | 17.5' TO 18.5'. WEATHERED, |
| 30 | | | | | | | | | ļ . |] | | FRACTURED, OXIDIZED SOFT AND FRIABLE |
| | | | | | | | | | | _ | | FROM 15' TO 17'. (3-65) |
| | | | | | | | | | | | | FROM 17' TO 20', |
| | | | | <u> </u> | | | | <u> </u> | | 1 | | STEEP FOLIATION. (1-65) |
| | | | | | + | | <u> </u> | <u> </u> | - | | | END OF HOLE 20" |
| 40 | 1 | | | | | | | | | 1 | 1 | |
| Soil | Engineer: _ | | | | | | D | riller: _ | | | | IDGPAL |
| Drilli | ng Inspecto | £ | | | | | | elper: . | A | LVRO L | ODDO | N |

Warren George Inc. SUBSURFACE EXPLORATION

SHEEL BRONX, OF 3
LOCARON MG-848-99
HOLE NO N: 322, 750.80
UNE & STA E: 625, 279.85 OFFSET ___

1 99010

| | L. 35 | 701B | FOR: | ETCAL | _F &E LI | ו– אמי | 187FL | NANI |) SAWY | <u>-</u> K | |
|---------------------------|---|------------------|---------------------------|--------------------|-------------------|-------------------|-------------|-------------|-----------------------------|------------------------------------|---|
| M PIH | | rı | H. CASING OUT I | | | DAfE | , Finish: | | -28-99 -1-99 | GROU GROU | IND ELEVATION 179.30 IND WATER ELEVATION 27199 |
| CASING SAMPLE DIAMO | ER OD 2" NO BII SZE | NΩ | 1.D | WEIGHT INSIDE L | of Ham Ength C | imer _ De same | 300 CLER | 0-149 24 | LBS LIN. C | HAMMER FALL CASING 24" SAMPLER 30" | |
| į | CASING BLOWS FER FOOT | SAMPLE NUMBER | SAMPLE DEPTHS ELEV - FEET | SAMPLE RECOVERY | | BLOWS ON SA | MPLER | | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPIH | FIELD IDENTIFICATION OF SOIL |
| - 0 - | | | | ~ | 0-6 | 6 -12 | 12 - 18 | 18 - 24 | MOISTURE | 07- | TOPSOIL (2"). DARK |
| | | SS1 | 0,-2, | 8" | 6 | 7 | 7 | 7_ | | 0 | GRAY SILT WITH SAND, ORGANIC |
| | | | 2'-4' | 3" | 9 | 9 | 12 | 12 | | 4' | MATTER. STIFF. |
| | | | 4'-6' | 8" | 16 | 23 | 30 | 100 /5" | | | RUSTY BROWN SILTY F-M SAND, TRACE TO |
| | | | 6'-8' | 4" | 87 | 100 | /5" | | | | SOME GRAVEL, COBBLES. (SM) (6-65) |
| - 10 - | | | 8'-10' | 5" | 80 | 92 | 96 | /2" | | | |
| | | SS6 | 10'-12' | 3" | 100 | /4" | | | | | |
| | | | | - | | | | | 1 | 15' | |
| | | SSZ | 15'-17' | 3" | 75 | 100 | /1" | - | - | | GREENISH GRAY SILT F-C SAND, LITTLE TO |
| | | SSS | 17'-19' | 5" | 32 | 44 | 46 | 50 | - - | | SOME GRAVEL, COBBLES, BOULDERS. VERY DENSE. TILL |
| -20 | | SSS | 19'-21' | 8" | 45 | 42 | 40 | 38 | 1 | | MATERIAL. (SM AND GM) (6-65) |
| | SS | 10 | 21'-23' | 10' | 45 | 52 | 55 | 72 |] . | 23' | |
| | | - | | | - | | - | | | | GNEISS. MEDIUM GRAY. STEEP FOLIATION(60 DEGRE |
| | | Ri | 23'-29' | | / REC | | | | | | TO SUBVERTICAL). OXIDATION ON JOINT: |
| 30 | † | | | 25 | Z RQI | | - | 1 | - | | TO 60.5'. |
| | | | | - | <u> </u> | <u> </u> | <u> </u> | - | - | | FROM 23' TO 36.5', |
| | | + | | - | | † | +- | ļ | ╡ . | | HARD, OXIDIZED, FRACTURED FROM 23' |
| | | - | | | | - | - | 1 | - | | TO 28'. A SUB- VERTICAL FOLIATION JOINT FROM 31' TO |
| 40 | | R2 | 29'-39' | | Z REC | | | 1 | |); | 32', SMOOTH, |
| | Engineer: | | | | | |)riller: | C | ESAR N | 10RIER | |
| | | Seed - Called | | | | | _ | <u>'</u> | IIKE K | ELLY | |
| <u> </u> | - 2000000000000000000000000000000000000 | - | | | | | | | | | |

Warren George Inc. SUBSURFACE EXPLORATION

| SHEET | ∠ of 3 | |
|-------------|---------------|-----|
| LOCATION_ | BRONX, NY | _ |
| HOLE NO. | MG-848-99 | _ |
| LINE & SIA. | N: 322,750.80 | 1.1 |
| DEEZEI | E:625,279.85 | |

| DEPIH | | | | WEIGHI INSIDE LI | OF HAM | | |)- <u>1</u> 40 | | IRS | ND ELEVATION 179.30 ND WAIER ELEVATION 171.05 HAMMER FALL ASING 24" SAMPLER 30" |
|------------------------|-----------------------------|--------|--|---------------------------------|--|-------------------------|----------|----------------|---------------------------------------|----------------------------|--|
| | CASING BLOWS PER FOCI | SAMPLE | SAMPLE DI | SAMPLE | ŭ · 6 | BLOWS ON SA 6 -12 | | 16 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| 50 -10 -20 70 | | R5 R6 | 39'-43' 43'-51' 51'-56' 56'-60' | 52% 70% 30% 96% 56% 37% 94% 55% | REC ROD REC ROD REC ROD REC ROD | | | | | 70' | WITH A 10-DEGREE JOINT ACROSS FOLIA- TION, OXIDIZED, ROUGH. (4-65/3-65) MODERATELY CLOSE JOINT SPACING FROM 36.5' TO 38'.CLOSE- LY JOINTED FROM 38: TO 59' AND BELOW 63'. SUBVERTICAL FOLIATION JOINT, IRREGULAR, CURVED, SMOOTH, CHLORITE, ALTERATION, TIGHT. FROM 36.2' TO 37'. FROM 43' TO 48', FIVE SUBVERTICAL FOLIATION JOINTS, SMOOTH, OXIDIZED, OPEN, WITH SIX 10 T 20-DEGREE JOINTS ACROSS FOLIATION, OXIDIZED, OPEN. FROM 51.5'TO 53.4' CLOSELY JOINTED WITH SUBVERTICAL FOLIATION JOINTS, SMOOTH, OXIDIZED, OPEN, WITH FOUR S-DEGREE JOINTS ACROSS FOLIATION, ROUGH, OXIDIZED, OPEN. AT 55.5' TWO 60-DE GREE FOLIATION JOINTS, SMOOTH, |
| 80 | | 1 | | | | | <u> </u> | | | | OXIDIZED, TIGHT. |

JULI COUNTRIES

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI George Inc.

SHEEL BRONX, OF 5
LOCATION MG-B48-99
HOLE NO N: 322,750.80
OFFSEL E: 625, 279.85

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

| | | | II CASING OUI ALL CASING OUI DATE. | DAIE: | | DAIE | SIART: | 1- 2- 0-140 | 0 | _ GRO | UND ELEVATION 179.30 UND WATER ELEVATION 171.05 ALUISS HAMMER FALL |
|----------------------------|---------------------------------|--------|---------------------------------------|---------|-----|----------------|---------------------|-----------------------|-----------------------------|----------------------------|---|
| , ASON BANIPLI SHANK | 00 HW 2 00 2" NO BIT SIZE | INSIDE | ENGIH (| OF SAME | LER | 24 | | CASING 24" SAMPLER30" | | | |
| | CASING BLOWS ELEV FEET | | SAMPLE DEPTHS | SAMPLE | | BLOWS ON SA | MPLER | | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FELD IDENTIFICATION OF SOIL |
| - 10· | | | | | 0.6 | | | | | | ROCK QUALITY IM- PROVES FROM 59' TO 63' WITH MODERATEL CLOSE JOINT SPACING. (3-65/2-65) ROCK CLASS FROM 36.5' TO 63'. BELOW 63', ROCK IS CLOSELY JOINTED. (3-65) FROM 63.5' TO 64.5' SIX SMOOTH 50-DE- DEGREE FOLIATION JOINTS, TIGHT. FROM 66' TO 66.9', A 60-DEGREE FOLIA- TION JOINT, SMOOTH TIGHT WITH ONE 50- DEGREE JOINT ACROS FOLIATION, SMOOTH, OPEN. FROM 68.25' TO 69' AN 80-DEGREE JOINT ACROSS FOLIATION, IRREGULAR, ROUGH, TIGHT. END OF HOLE 70' |
| - [| 10 | | | | | | | .] | CESAR | MORIE | L |
| | oli Engineer: riting inspe | | | | | | Driffer: Helper: | | MIKE K | | |

WGI Warren George Inc.

| SHEET | ı | or 2 |
|------------|--------|---------|
| LOCATION | BRONX | NY |
| HOLE NO _ | MG-849 | 3-99 |
| LINE & SIA | N: 322 | ,798.68 |
| CHESE! | E: 524 | ,883.11 |

L.9901B

FOR: METCALF&EDDY-HAZEN AND SAWYER

| DEPIH DEPH | | II | II CASING OUI ALI CASING OUI DAIL | DAIE | | DAIE. | SIARI FINISH | 2- 2- | -10-99 -11-99 | _ GROUN | D REVATION 194.48 D WATER ELEVATION 179,51 |
|--------------------------|-----------------------------|--------|--------------------------------------|--------------------|--------------------|-----------------|-----------------|------------|------------------------------|----------------------------|---|
| CASING SAMPU DIAMO | OD HW R OD 2" | NQ | ID | WEIGHI INSIDE L | OF HAMI ENGTH O | MER F SAMPI | 300 | -140 24 | | _ IN. C# | HAMMER FALL SING 24 H SAMPLER 30 T |
| | CASING 8LOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV FEET | SAMPLE | | BLOWS ON SAM | | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOR |
| -0- | | | 0'-2' | 14" | | 1 2 | 2 | 2 | | 0'- 2' | TOPSOIL (6"). DARK BROWN SILTY FINE SAND, ORGANIC MATTER. (SM)(11-65 |
| | | 553 | 4'-6' 6'-8' | 15" | | 7 | 12 | 14. | | | RUSTY BROWN SILTY FINE SAND, TRACE T LITTLE GRAVEL FROM |
| -10 | | | 5558'-10' | | 21 | 19 | 20 | 21 | 1 | | 8' TO 20'; WITH SOME GRAVEL BELOW 20'. |
| | | SS | 15'-16' | 6" | 57 | 100 | /6" | | 1 | | MEDIUM DENSE TO DENSE. (SM AND GP) (6-65) |
| _20 | | | | | | | | | | | |
| | | SS | 720'-22' | 12 | 29 | 44 | 47 | 56 | - - - - - | 251 | |
| | | SS | 825' -26! | 8" | 49 | 100 | 0 /5 | | | 25' | YELLOW BROWN SILTY F-M SAND, MICA, ROCK FRAGMENTS (GNEISS), COBBLES |
| -3 | 0 | SS | 930*-30.5* | 3" | | /5 | | | | | AND BOULDERS. VERY DENSE. POSSIBLE SAPROLITIC SOIL (DECOMPOSED ROCK) |
| | | R | 34'-36' | | Z RE | | | | | 347 | (SM AND GM) (6-65/5-65) GNEISS.MEDIUM GRAY |
| | 40 | R | 2 36'-37' | 66 | X RQ | c | | | | | QUARTZITIC FROM 34 TO 56'. SEVERAL QUARTZITIC BANDS |
| · Se | oil Engineer: | 3015 N | | | | | Orliler: | | | IARNEY | |
| ٥ | Milling Inspe | ctor: | | | | | Helper: | | GREG V | VILLIAN | 15 |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

DEEL BRONX, OF NY LOCAHOR MG-849-99
HOLE FIG. N: 322, 798.68
OFFSEL E: 624, 883.11

| | L. 99 | 9018 | | FOR: | METCAL | F&EI | DY- | HAZEI | NA N | D SAWY | ER | |
|------------------------------|--------------------------------|------------------|----------|----------|---------------------|--------|------------------|-----------------|------------|---------------------------------------|---------------------------|---|
| अधार | | F | L H CA | JIAC IUC | - | | DAII | SIARI FINISH | | -10-99 -11-99 | GRC | OUND ELEVATION 194.48 OUND WATER ELEVATION 179.51 2/5/99 |
| C ASING SAMPLEI DIAMON | OD HW 2 OD 2" 4D BIT SZE | NQ | _ 1D | | WEIGHI INSIDE LE | OF HAN | IMER _ OF SAM | 30 Pler | 0-14 24 | | _ i.85 IN. | HAMMER FALL CASHING 24" SAMPLER 30" |
| | CASING BLOWS PER FOOI | SAMPLE NUMBER | SAMPLE C | | SAMPLE | 0 6 | ON SA | PER 6" MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANG DEPIH | FIELD IDENTIFICATION |
| 40 | | R3 | 37'-45' | | 93% | | | | | | | BELOW 60'. FOLIATION IN- DISTINCT FROM 34' TO 55' AND BELOW 66'. FROM 55' TO 66', |
| 50 | | | | | | | | | | | | FOLIATION AT 30 TO 50 DEGREES. DXIDATION ON JOINT TO 44'. |
| | | R4 | 45'-55' | | 97% | REC | | | | | | FROM 34' TO 37', ROCK IS WEATHERED, OXIDIZED, FRACTURE AND SOFT FROM 36' TO 37'. (3-65/4-65) |
| 60 -20 - | | | | | | | | | | | | ROCK QUALITY IM- PROVES FROM 37' TO 59', 67' TO 75', WHERE ROCK IS MODERATELY JOINTED |
| 70 | | R5 | 55'-65' | | | REC | | | | | | AT 54' AND 55.8', TWO SUBVERTICAL JOINTS WITH FOLIA- TION TREND, SMOOTH AND 5-DEGREE JOIN' ACROSS FOLIATION, SMOOTH. (2-65) |
| - 30 - | | R6 | 65'-75' | | | REC | | | | | 75' | ROCK IS CLOSELY JOINTED FROM 59' TO 67'. (3-65) |
| 80 -40 | | | | | 84% | RQI | | | | | | END OF HOLE 75' |
| Soil I | Engineer: | | | | | | | riller: | G | REG MA | RNEY | |
| Drillin | g Inspecto | or: | | | | | + | leiper: . | G | REG WI | LLIA | MS |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | 1 OF ∠ |
|-------------|--------------|
| LOCATION_ | BRONX, NY |
| HOLE NO | MG-B50-99 |
| LINE & STA. | N:322,846.45 |
| OFFSET | E:624,486.32 |
| | |

L.99018

FOR METCALF&EDDY-HAZEN AND SAWYER

|) Pişt | | | H CASING OUI | | | | | 2. | -12-99 | GPO | IND ELEVATION 193.62 |
|----------------|--------------------------------------|--------|------------------------------|--------|--------------------|-----------------|----------|------------|-----------------------------|----------------------------|---|
| <u>н</u> и у | | | ALL CASING OUI DAIE | | | DAFE | FINASH: | | -13-33 | GRO | und water elevation 186.25 |
| ALIP | G OD HW ER O.D 2" OND BIT SIZE | | _10 | WEIGHT | OF HAMI ENGIH O | MER _ F SAMF | 30 | 0-14 24 | 0 | _ IBS. IN. C | HAMMER FALL CASING 24" SAMPLER ^{20"} |
| | CASING BLOWS PER FOOI | SAMPLE | SAMPLE DEPTHS ELEV , FEET | SAMPLE | | BLOWS ON SAI | MPLER | 18 - 24 | DENSITY OR CONSIST MOISTURE | PROFILE CHANGE DEPTH | FIFED IDENTIFICATION |
| o - | | | 0'-2' | 14" | 1 | 1 | 1 | 1 | | 0'- | TOPSOIL (3"). DARK BROWN SILTY SAND, ORGANIC MATTER. |
| - 10 - | | | 2'-4' 4'-5.2' | 18" | 32 | 7 40 | 12 | 20 /3" | | 7, | RUSTY BROWN SILTY FINE SAND, TRACE TO SOME GRAVEL. DENSE TO VERY DENSE. (SM) (6-65) |
| | | R1 | 7'-15' | | REC ROD | | | | | | GNEISS. LIGHT GRAY MODERATELY HARD TO HARD. FOLIATION AT 40 TO 80 DEGREES. OXIDATION ON JOINT TO 52'. |
| -20 | | | | | | | | | | | FROM 7' TO 9.5'. ROCK IS FRACTURED, OXIDIZED ON JOINTS MODERATELY WEATHERED. AT |
| | | R2 | 15'-25' | | % RQD | REC | | | - | | 10.25', TWO 45-DE- GREE JOINTS WITH FOLIATION TREND, HALF INCH APART, SMOOTH, OXIDATION. (4-65/3-65) |
| -30 | | | | | | | | | | , | - |
| | | R3 | 25'-35' | | % RQD | RE(| | | | | |
| 40 Soi | Engineer: | | | 1_ | | | riller: | G | REG MA | ARNEY | |
| l. | ing Inspect | Of: | | | | _ | elper: _ | G | REG W | ILLIAM | 15 |

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | OF |
|------------|----------------|
| LOCATION_ | BRONX, OF NY |
| HOLE NO _ | MG-B50-99 |
| - 100 | N: 322,846.45 |
| LINE & SIA | E:624, 486, 33 |

| | L.9 | 9018 | | FOR: | METCAI | | | | N AN | D SAWY | 1 | SEI |
|----------------------------|-----------------------------------|----------------|------------------|--|--|-------------------|--|--------------|-----------------|------------------------------|----------------------------|---|
| DE PH | | Н | H. CA | OUI DAIE | DAIE: | | | . SIARI: | | -12-99 -15-99 | GROU | ND ELEVATION 193.62 ND WATER ELEVATION 186.25 |
| C'ASINI SAMPL DIAMIC | SOD HW EROD 2" END BIT SIZE | NQ | 10 | | WEIGH! INSIDE L | of Han Engih (| AMER _ | 30 PLER | 0-14 24 | 0 | LBS | HAMMER FALL ASING 24" SAMPLER30" |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE I | | SAMPLE | | | MPLER | | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| - 0 | | | | | ٩ | 0.0 | 6 -12 | 12 - 18 | 18 - 24 | MOISTORE | | |
| 40 | | | | | | | | | |] | | ROCK QUALITY |
| | | R4 | 35 <u>' -45'</u> | | _ | REC | | | | | | IMPROVES BELOW 9.5'. MODERATELY CLOSE JOINT SPACING |
| 1 | | | | | 937 | RQI | | | | - | ŀ | EXCEPT FROM 45' TO 55' WHERE ROCK IS |
| 50 | | | | - | 1- | | | | | 1 | ļ | CLOSELY JOINTED. |
| - 10 - | | | | | | | | | | - | | FROM 45.7'TO 46.5', |
| | | | | | | | | | |] | | 70 DEGREES) INTER- |
| i | | | | | | | | | | | | SECTING EACH OTHER, |
| | \ <u> </u> | R5 | 45' -55' | | 100 | 7 | REC | - | 1 | | | A 70-DEGREE FOLIA- |
| | | | | | | RQI | | | | 1 | | TION JOINT, SMOOTH, OXIDIZED, FROM |
| | <u> </u> | | | | | | - | | - | - | | 46.5' TO 47'. AT 71' AND 76', TWO |
| 60 | | | | | | | | | | 1 | 1 | 50-DEGREE JOINTS |
| -20 | | | | | | | | | | 1 | | ACROSS FOLIATION, ROUGH, ALTERED IN |
| | <u> </u> | - | | | | | ļ | | 1 | - | | CHLORITE. |
| | | | | | | | | | | ₫ . | | AT 79.5', A 70-DE- GREE JOINT ACROSS |
| | } | R6 | 557-65 | <u> </u> | 100 | 1/4 | RE(| - | - | 1 | | FOLIATION, ROUGH, ALTERED IN |
| | | | | | | | 120 | | ‡ — | 1 | | CHLORITE. |
| 70 | | | | | - | | - | ├ | +- | -[| | (1-65/2-65) |
| -30 | | - | <u> </u> | 100 | - | | | 1 | 1 | - | | |
| | | | | | | | | - | + | = | | |
| | | - | | | 4 | | - | | |] | | |
| | | R7 | 65! -75 | , | 100 | 1% | RE | - | + | 1 | | |
| | | | | | 96 | RQI | | | | | | PIEZOMETER |
| 1 | | | | | | | 1 | 1 | 1 | | ļ | INSTALLED AT 70'. |
| 80 | | R8 | 751-80 | <u>. </u> | | X RQI | RE | | | 7 | 901 | END OF HOLE DOS |
| -40 | | - | 1 | | 1_00 | <u>a 1514</u> 1 | 4 | | ا يا | Dre Ma | 80° | END OF HOLE 80' |
| Soil | Engineer: | | | | | | D | riller: _ | | REG MA | IKINE Y | |
| Dritts | ng inspecto | c | | | | | — н | elper: - | E | REG WI | LLIAM | 3 |

JOHNSON

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

SUBSURFACE EXPLORATION

SIST 1 1 IOCATION BRONX, NY

HOLE NO N: 323, 583. 36

E: 625, 500. 11

L.99018

FOR: METCALF&EDDY-HAZEN AND SAWYER

| 8.0 | | | H CASING OUI ALL CASING OUT DATE | | | | | | | GROU | ND ELEVATION 166 78 ND WATER ELEVATION 164.21 312499 |
|---------------------------|------------------------------------|------------------|-------------------------------------|---------------------|--------------|----------------|-----------------|------------|---------------------------------------|----------------------------|--|
| -USING AMPLE MAMACH | O.D. HW R O.D 2" NO BIT SIZE | NQ | 1.0 | WEIGHI INSIDE LI | OF HAN | IMER _ | 30 [.] | 0-14 24 | 0 | _ IN C | HAMMER FALL ASING 24" SAMPLER30" |
| - 1 | CASING BLOWS PER FOOT | SAMPLE NUMBER | SAMPLE DEPIHS ELEV . FEET | SAMPLE | 0.0 | BLOWS ON SA | | 1B - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| 0 - | - | SS1 | 1'-3' | 6" | 3 | 6 | 4 | 4 | | 0'- 3' | TOPSOIL (4"). DARK BROWN SILTY FINE SAND, ORGANIC MATTER, TRACE GRAVEL. LOOSE. |
| | | | 4'-6' | 12" | 4 | 6 | 5 | 8 | | 67 | (SM) (11-65) TAN BROWN SILTY FINE SAND. MEDIUM |
| - 10 - | - | | 7'-9' 10'-12' | 6" NR | 20 | 17 | 12 | 30 | | | GREENISH GRAY SILTY SAND, TRACE GRAVEL, |
| | | | 13'-15' | 14" | | 20 | 31 | 41 | | 13' | DENSE. (SM) (7-65) YELLOW/GRANGE BROWN TO DARK GRAY SILTY |
| 20 | | 886 | 16'-16.2' | 4" | 100 | /3' | | | | 17' | F-M SAND, TRACE GRAVEL, MICA, ROCK FRAGMENTS. VERY DENSE. POSSIBLE SAPROLITIC SOIL |
| - 50 - | | R1 | 17'-22' | 757 757 | REC RQI | | | | - - - - - | 22' | (DECOMPOSED ROCK). (SM AND GM) (6-65) GNEISS. LIGHT GRAY, HARD, WEATHERED. |
| | | | | | | | | | | | FOLIATION AT 70 DEGREES TO SUBVERT- ICAL. ONE HORIZON- TAL JOINT, OXIDIZED, ROUGH. |
| - 30 - | | | | | | | | | | | DRILLING ROD DROPP- ED RAPIDLY FROM 21' TO 21.5' OF DEPTH. GENERALLY MASSIVE. |
| | | | | | | | | - | | | END OF HOLE 22' PERMEABILITY TESTS |
| 40 | | | | | | | | | | | IN SOIL. MONITORING WELL INSTALLED AT 16'. |
| 504 | Engineer: | <u>,</u> | | | · · <u>·</u> | | riber: _ | R | EYNOLI | S BRI | DGPAL |
| Onter | ng inspecto | × | | | | | lelper: . | | ALVRO L | NOQNO_ | |

JQB LOCATION:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET" | CF |
|-------------|--------------|
| LOCATION. | BRONX, NY |
| | MG-852-99 |
| HOLE NO - | N: 324006.96 |
| LINE & SIA. | E: 625455.73 |
| OFFSET | 2.020.70 |

L.99244

FOR: METCALF&EDDY-HAZEN AND SAWYER

| | | | | | | 1 | | | | | 169 71 |
|---------------|-----------------------------|--------|--|--------------------|--------|-----------------|-------------------|---------|------------------------------|----------------------------|--|
| PIH _ | | FI. | FI. Casing out I . All casing out date: | DAIE: | | DATE. | START: FINISH: | 7- | -23-99 -24-99 | GROUN | D ELEVATION 163.71 D WATER ELEVATION 160.57 |
| SING MPLER | | | LD | WEIGHT INSIDE L | OF HAN | IL IFO | 300 |)-140 | 0 | 105 | HAMMER FAIL ASING 24" SAMPLER 30" |
| - | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV. / FEET | SAMPLE | 0.6 | BLOWS ON SAI | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | RELD IDENTIFICATION OF SOIL |
| , + | | SSI | 1'-3' | 1" | 3. | 3 | 3 | 3 | | 0'- 3' | TOPSOIL/HUMUS(10") GRAY SILT WITH FINE SAND, SOFT |
| - - | | SS2 | 4'-6' | 20" | 4 | 3 | 3 | 5 | | 6' | GRAY TO TAN BROWN SILTY FINE SAND, LODSE, TRACE MICA, |
| 10 - | | SSS | 7'-9' | 18" | 10 | 6 | 12 | 40 | | io, | (SM) (7-65) GRAY FINE SAND, WITH SOME SILT, TRACE GRAVEL, MICA |
| | | SS4 | 10'-12' | 6" | 2 | 1 | 2 | 3 | | | MEDIUM DENSE TO DENSE.(SM)(7-65) YELLOW BROWN BILTY |
| | | | 13'-15' 16' | 0" | 100 | 3 /0" | 11 | 20 | | 16' | FINE TO MEDIUM SAND, TRACE GRAVEL MICA, ROCK FRAGMENTS, MEDIUM DENSE TO DENSE. |
| 20 | | | | | | | | | | | (SM AND GM) (6-65) |
| | | | | | | | | | - | | PERMEABILITY TEST |
| -3ó | | | | | | | | | | | MONITORING WELL INSTALLED AT 16'. |
| | | | | | | | | | | | _ |
| | | | | | | | | | | | |
| -40 | , | | | | 1 | | | 1 | 1_ | | |
| Soil | Engineer. | | · · · · · · · · · · · · · · · · · · · | | | | Orliler: | • | | URENZA | · . |
| Orit | ling Inspec | ctor | | | | | Helper: | | JOHN C | LMO | |

MOSHLOU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | BRONX, ON |
|------------|--------------|
| LOCATION | MG-B53-99 |
| LINE & STA | N: 324340.42 |
| OFFSET | E:625139.18 |
| | |

SOR METCALF&EDDY-HAZEN AND SAWYER

| | L.99 | 850 | FOR: M | | 123 2 | | | | | - 1 | | | |
|------------|-----------------------------|--------|--|--------|---------|----------------|-------------------|----------|------------------------------|---------------------|-------------------|--|--------------------------|
| Н. IН. | | F1. | FI. CASING OUT (ALL CASING OUT DATE: | DAIE: | | DATE. | START: FINISH: | 7- 7- | 27-99 27-99 | _ G | ROUND ELE | VATION 174.5 | 68.59 7/28/59 |
| NG PLEI | OD HX | | 1.D | | DC 1141 | | 300 | -140 |) | t B S | CASING | HAMMER FALL 24" SAMPLER | |
| | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV. / FEET | SAMPLE | 0.0 | BLOWS ON SA | | 16 - 24 | DENSITY OR CONSIST. MOISTURE | PROF CHAN DEP | iGE | FIELD LIDENTIFIC OF SOIL | |
| + | | | 17-37 | 18* | | 3 | 3 | 3 | | 01. | YE BR | PSOIL/HUM LLOW BROW ROWN SILTY AND, TRACE STTLED, LO | N TO FINE GRAVEL |
| | | | 4'-6' | 16" | 7 | 24 | 24 | 31 | | <u>6'</u> | DE YE 5' S' | NSE.(SM) ELLOW BROW INE TO MED AND, TRACE | (7-65) N SILTY IUM |
| D - | | | 9.5' | 0" | | /2 | | - | 1 | _ | M: FI | ICA, ROCK RAGMENTS, SM AND GM) | DENSE. (6-65 |
| | | | | | | | | | | | P | ND OF HOLE ERMEABILI N SOIL. | |
| 20 | | | | | | | | | - - - - | | M | ONITORING INSTALLED | WELL AT 9.5' |
| | | | | | | | | | | | | | w. |
| 3(| , | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | |
| | | | | | | | Driller: | | SAL L | AURE | NZA | | |
| " | xii Engineer | | | - | | | Helpe | | JOHN (| DLMC |) | | |

page coursings.

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEET | - Of - L |
|----------------|----------|
| OCATION BRONX | , NY |
| HOLE NO. MG-B5 | 4-99 |
| | 722.17 |
| OFFSET E: 625 | 513.99 |

L.99244

FOR: METCALF&EDDY-HAZEN AND SAWYER

| CASING SAMPLI | O.D. HX | | ALL CASING OUT DATE: | WEIGHE | OF HAM | IMER _ | 30 | 0-14 | - 22-99 0 | L8S. | HAMMER FALL CASING 24" SAMPLE 30" |
|------------------|-----------------------------|--------|-------------------------------|--------|--------|----------------|-------|---------|---------------------------------------|----------------------------|---|
| - 0 | CASING BLOWS PER FOOT | SAMPLE | SAMPLE DEPTHS ELEV. / FEET | SAMPLE | 0.6 | BLOWS ON SA | MPLER | 18 - 24 | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | FIELD IDENTIFICATION OF SOIL |
| | | | 1'-3' | 18" | | 4 | 47 | 8 | | 0' - 4' | TOPSOIL/HUMUS/ROOTS (12").TAN BROWN SILTY FINE TO MEDIUM SAND, TRACE MICA, LOOSE. (SM) (7-65) |
| - 10 - | | SS3 | 7'-9' | 18" | 7 | 7 | 8 | 8 | | | GREENISH BROWN GRAY SILTY FINE SAND, TRACE GRAVEL, MEDIUM DENSE. (SM) (7-65) |
| | | SS5 | 10'-12' 14'-16' | 15** | 20 | | | 91 | | 167 | YELLOW BROWN TO BROWN SILTY FINE TO MEDIUM SAND, TRACE GRAVEL, MICA, ROCK FRAGMENTS, DENSE. (SM AND GM) (6-65) |
| - 20 - | | | | | | | | | | | END OF HOLE 16' PERMEABILITY TESTS IN SOIL. |
| | | | | | | | | | | | MONITORING WELL INSTALLED AT 15.5' |
| -30 | | | | | | | | | | | |
| -40 | | | | | | | | | | | |

JQB LOCATION:

MOSHOLU GOLF COURSE VAN CORTLANDT PARK CONTRACT HED-543

WGI Warren George Inc.

| SHEE! | 1 00 1 |
|------------|-------------|
| LOCATION_ | BRONX, ONY |
| | MG-B55-99 |
| HOLE NO | N:323616.50 |
| LINE & STA | E:624534.67 |

L.99244

FOR METCALF&EDDY-HAZEN AND SAWYER

| | L. 7 | 3244 | FOR: | IE I CMI | TI OFF | יר ז ענ | THZE | A Legar | J SHWIE | | |
|--------|-----------------------------|-----------------|--|--------------------|-------------------|-----------------|---------------------------|-------------|---------------------------------------|----------------------------|--|
| HI4# | | FI | FI. CASING OUT ALL CASING OUT DATE: | DATE: | | DAIE | , STARI: FINISH | 7. | -20-99 -21-99 | GROUP | #D ELEVATION 187.85 #D WATER ELEVATION 7/28/99 |
| AMPL | ER O.D.4 | | I.D | WEIGHT INSIDE (| of had Ength (| AMER OF SAME | 300 Tuer | 0-140 24 | 0 | . LB\$. IN. C7 | HAMMER FALL ASING 24" SAMPLER 30" |
| . 0 = | CASING BLOWS PER FOOT | SAMPLE | Sample Depths Elev. / Feet | SAMPLE | 0.6 | | PER 6 MPLER 12 · 18 | | DENSITY OR CONSIST. MOISTURE | PROFILE CHANGE DEPTH | RELD IDENTIFICATION OF SOIL |
| . 0 - | | | | | | | | | | 0'- | TOPSOIL (8"). TAN |
| Ş | | SS1 | 1'-3' | 18" | 7 | 8 | 8 | 8 | | | BROWN TO GRAY SILTY FINE SAND, TRACE |
| | | SS2 | 4'-6' | 20" | 10 | 10 | 13 | 20 | | 6' | FINE GRAVEL, MICA. MEDIUM DENSE. (SM) (7-65) |
| - 10 - | | - | 7'-9' 10'-10.75' | 18" | 18 | | 15 /3" | | | 10. | YELLOW BROWN TO BROWN SILTY FINE TO MEDIUM SAND, TRACE GRAVEL, MICA, ROCK |
| | | | | | | | | | | | FRAGMENTS, DENSE. (SM AND GM) (6-65) |
| | | | | - | - | | | | 1 | | END OF HOLE 10.75' |
| | | | | | | | | | 1 | | PERMEABILITY TESTS IN SOIL. |
| 20 | | | | | | | | | - - - - | | MONITORING WELL INSTALLED AT 10'. |
| | | | | | | | | | | | |
| | | | | | - | | | | | | |
| -30 | | | | | | | | | = - - | | |
| | | | | | | | | | 1 | | |
| | | | | | - | + | ļ | - | | | |
| | | | | | | | | | | | |
| - 40 | , | | 1 | | Ţ | I | 1 | | 1 | | 1 |
| Soit | Engineer: | | | | | | Orller: _ | | AL LAU | | |
| Ont | ing inspect | or | | | | <u></u> , | lelpei: | | OHN OF | _MO | |

APPENDIX B AIR TRACK BORING DATA

AIR TRACK BORINGS

| AIR TRACK NO. | NORTHING | EASTING | ELEVATION | DEPTH TO | ROCK |
|--|------------|------------|--------------------|----------|-----------|
| Se reposition and advisor with the second contraction of the second co | | | | ROCK | ELEVATION |
| AT-1-99 | 323,231.34 | 625,305.43 | 177.08 | 15.0 | 162.1 |
| AT-2-99 | 323,287.15 | 625,125.73 | 180.82 | 14.0 | 166.8 |
| AT-3-99 | 323,338.53 | 624,960.29 | 184.97 | 12.0 | 173.0 |
| AT-4-99 | 323,317.85 | 624,836.76 | 189.79 | 4.0 | 185.8 |
| AT-5-99 | 323,367.50 | 624,683.17 | 192.19 | 3.0 | 189.2 |
| AT-6-99 | 323,359.03 | 624,565,00 | 193.65 | 7.0 | 186.7 |
| AT-7-99 | 323,184.34 | 624,516.58 | 196.16 | 6.5 | 189.7 |
| AT-8-99 | 322,987.27 | 624,510.54 | 195.61 | 6.0 | 189.6 |
| AT-9-99 | 322,970.92 | 624,634.44 | 196.32 | 12.0 | 184.3 |
| AT-10-99 | 323,198.40 | 624,720.01 | 193.80 | 4.0 | 189.8 |
| AT-11-99 | 322,933.85 | 624,896.02 | 195. 69 | 30.0 | 165.7 |
| AT-12-99 | 323,110.38 | 624,965.17 | 192.19 | 11.0 | 181.2 |
| AT-13-99 | 322,959,60 | 624,999.33 | 195.74 | 31.0 | 164.7 |
| AT-14-99 | 323,095.14 | 625,134.66 | 183.81 | 13.0 | 170.8 |
| AT-15-99 | 322,948.07 | 625,239.02 | 178.66 | 21.5 | 157.2 |
| AT-16-99 | 323,273.77 | 625,244.18 | 178.58 | 13.0 | 165.6 |
| AT-17-99 | 323,086.88 | 624,347.88 | 194.96 | 14.5 | 180.5 |
| AT-18-99 | 323,262.25 | 624,412.03 | 198.80 | 4.0 | 194.8 |
| AT-19-99 | 323,142.66 | 624,281.03 | 195.30 | 12.0 | 183.3 |
| AT-20-99 | 322,812.53 | 624,821.34 | 193.08 | 36.0 | 157.1 |
| AT-21-99 | 322,794.33 | 624,710.90 | 193.51 | 10.0 | 183.5 |
| AT-22-99 | 322,841.98 | 624,912.32 | 196.62 | 44.0 | 152.6 |
| AT-23-99 | 322,838.48 | 624,984.86 | 197.17 | 40.0 | 157.2 |
| AT-24-99 | 323,001.44 | 624,401.01 | 194.23 | 5.0 | 189.2 |
| AT-25-99 | 323,236.84 | 624,710.91 | 194.27 | 4.5 | 189.8 |
| AT-26-99 | 322,964.98 | 624,719.76 | 195.63 | 13.0 | 182.6 |
| AT-27-99 | 323,044.78 | 624,845.92 | 193.96 | 21.5 | 172.5 |
| AT-28-99 | 323,248.76 | 624,911.78 | 189.30 | 21.0 | 168.3 |
| AT-29-99 | 323,230.39 | 625,061.33 | 187.08 | 18.0 | 169.1 |
| AT-30-99 | 322,952.81 | 625,064.00 | 189.82 | 22.0 | 167.8 |
| AT-31-99 | 322,974.08 | 625,306.95 | 176.98 | 20.0 | 157.0 |
| AT-32-99 | 322,971.13 | 624,796.17 | 195.22 | 17.0 | 178.2 |
| AT-33-99 | 322,779.92 | 625,062.84 | 192.43 | 31.0 | 161.4 |
| AT-34-99 | 322,766.35 | 624,936.30 | 197.30 | 38,0 | 159.3 |
| AT-35-99 | 322,755.93 | 624,834.52 | 193.12 | 33.0 | 160.1 |

APPENDIX C
TEST PIT LOGS

Geotechnical Data Report2.doc

November 2000

| Warren George, Inc. Foot of Jersey Ava. DESCRIPTION Meashblu GC LOCATION Brown. TEST PIT No. MGCTP19.50WC DESCRIPTION Meashblu GC LOCATION Brown. TEST PIT No. MGCTP19.50WC DATE 3 MgcTp19.50WC DATE DA | 1.48 | - | | | TEST PIT | FIELD LOG | - | | | | |
|--|---|--------------------|-----------|----------|--|----------------------|--------------------------------------|----------------|---------------|--|---------------|
| OPERATOR John Srith MAKE Nagano WOOR, NS-35 THE STARTED JOHS J/9/99 THE COMPLETED JOHS J/9/99 THE | F | oot of | Jersey Av | e. | DESCRIPTION | Mosholu GC | FILE No. | <u>MG</u> | <u> 199.0</u> | OWG | |
| DEPTH SOIL DESCRIPTION SOIL DESCRIPTION EXCAV. BOULDER COUNT REMARK COUNT REMARK COUNT REMARK COUNT REMARK | OPERATOR John Smith TIME STARTED OB MAKE Nagano MODEL NS-35 TIME COMPLETED OB | | | | | | 15 3/9 | 9/99 9/99 | | | |
| DEPTH SOIL DESCRIPTION Top 6" Topsoil E 2/A 1' 3' Wide 2' Brown-tan F-C sand, some sit, little to tr. cobbies and boulders, moist to wet (SM) 6' 6' Water of 6.5' ♥ Brown-tan sity F-M sand, some growl, mica, rack frogunents, possible sprolitic soil (SM/GM) (6-65/5-65) Bottom of excovation 7.5 feet Sample taken at 7.5 feet Approximate vertical walls REMARKS: TEST PIT PLAN LEGEND: BOULDER COUNT SERVING UTILE (IL) 10-20X F-FINE CARRESCENS SOME (SO) 20-55X No. E 2/A E 3/A E 2/A E 3/A E 3/A B | WE/ | ATHER | 30 F. | Sunny | CAPACITY 0.5 | CU. YO. REACH 12 TE. | | | | | |
| Test Pit Plan | DE | 100 | | (| | ION | | - 00 | UNT | | |
| Brown—tan F—C sand, some sit, little to tr. cabbies and boulders, moist to wet (SM) 4' 5' 6' 8' Water at 6.5' Brown—tan silty F—M sand, some gravel, mica, rack fragments, possible sapprolite sol (SM/AA) (6-65/5-65) Bottom of excavation 7.5 feet Sample taken at 7.5 feet Approximate vertical walls Comparison of the control of | | ٠ - ا | | - | Top 6" Topsoil | | E | 2/ | Ά | [] | |
| Brown—tan F-C sand, some sit, little to tr. cobbies and boulders, moist to wet (SM) 6-65 Brown—tan sitty F-M sand, some grave, mice, rack fragments, possible soprolities of (SM/GM) (6-65/5-6-6) Brown—tan sitty F-M sand, some grave, mice, rack fragments, possible soprolities of (SM/GM) (6-65/5-6-6) Bottom of excavation 7.5 feet 9' Approximate vertical walls TEST PIT PLAN LEGEND: BOULDER COUNT STE PIT PLAN LEGEND: BOULDER COUNT TRACE (TR.) 0-10X LTRACE | | • | 3' Wide | | | | E | | | | |
| boulders, moist to wet (SM) E 3/A E 2/A E 3/A | Γ | 2 — | | | Brown-ton F-C | sond, some | E | 1/ | 'C | | |
| E 2/A E 3/A E 3/A Brown-tan silty F-M sand, some gravel, mica, rack fragments, possible saprolitic soil (SM/GA) (6-65/5-65) Bottom of excavation 7.5 feet Sample taken at 7.5 feet Approximate vertical walls REMARKS: REMARKS: C 3/A E 3/A D 6/A Saprolitic | | | | | boulders, moist | to wet (SM) | E | 3, | /A | | |
| Brown—ton silty F—M sand, some gravel, mica, rock fragments, possible saprolitic soil (SM/GM) (6–65/5–65) Bottom of excavation 7.5 feet 9' — Approximate vertical walls TEST PIT PLAN REMARKS: D | | 4' | 1 | 1 1 | | \ | E | 2, | /A | | |
| Brown—tan sitty F—M sand, some gravel, mice, rock frequents, possible saprolitic soil (SM/GM) (6-65/5-65) Bottom of excavation 7.5 feet 9' — Approximate vertical walls REMARKS: TEST PIT PLAN | | 5' | 1 | | | | E | 3, | /A | | |
| Saprolitic soii (SM/GM) (6-65/5-65) Bottom of excavation 7.5 feet Sample taken at 7.5 feet 9' Approximate vertical walls REMARKS: REMARKS: REMARKS: Test Pit Plan | \vdash | 6' | | | Brown—tan silty | F-M sand, some | D | 6 | /A | Saprolitic | |
| Sample taken at 7.5 feet 9' — Approximate vertical walls 10' — 11' — 12' — 13' — 14' — 14' — 14' — 14' — 15' — 1 | - | - 7° - | \ | 17 | | | - - | | - | | 1 |
| TEST PIT PLAN LEGEND: BOULDER COUNT SUSED TRACE (TR.) 0-10% TRACE (TR.) 0-10% TRACE (TR.) 10-20% TRACE (TR.) 10-20% TRACE (TR.) 10-20% TRACE (TR.) 10-20% TRACE (TR.) 10-20% TRACE (TR.) 10-20% TRACE (TR.) 10-20% TRACE (TR.) 10-20% TRACE (TR.) 0-1 | - | - 8' | - | | | | | | | | 1 |
| TEST PIT PLAN BOULDER COUNT SIES RANGE LETTER CUSSIFICATION DESIGNATION C"-18" A 18"-36" B SOME (SO) 20-35% TRACE (IR.) 0-10% LTILE (L.) 10-20% FOR THE TO COARSE FAMILY TO COARSE LECTOR SIES RANGE LETTER COARSE LUTTLE (L.) 10-20% FOR THE TO COARSE FAMILY TO COARSE FOR THE TO COARSE CHAPSED TIME TO READING C.W. (HRS.) | \vdash | - 9' | - | - | Approximate ve | rtical walls | - | | | | 1 |
| REMARKS: TEST PIT PLAN LEGEND: BOULDER COUNT TRACE (TR.) 0-10% LETTER LASSIFICATION DESPONSION DESPONSION LETTER LASSIFICATION DESPONSION DESPONSION LETTER LASSIFICATION DESPONSION DESPONSION DESPONSION LETTER LASSIFICATION DESPONSION DESP | - | -10' | - | 1 | | | | | | | ┨ |
| REMARKS: TEST PIT PLAN | - | -11' | 4 | | | | ļ <u>.</u> | | | _ | $\frac{1}{2}$ |
| REMARKS: TEST PIT PLAN | - | -12° | 4 | , P | | | - | - | | 1 | - |
| REMARKS: TEST PIT PLAN | | -13'- | _ | | | | _ | | | | 4 |
| REMARKS: TEST PIT PLAN | | 1A' <i>-</i> - | _ | İ | | | <u> </u> | | | | 4 |
| TEST PIT PLAN LEGEND: BOULDER COUNT SIZE RANGE LETTER CLASSIFICATION DESIGNATION 6"-18" A 18"-36" B SOME (SO) 20-35% 36" end Larger C ABBREVIATIONS F-FINE M-MEDIUM C-COARSE F/M-FINE TO COARSE F/M- | - | •• | | | | | | | | | |
| BOULDER COUNT SIZE RANGE LETTER CLESSFICATION DESCRIATION 6"-18" A 18"-36" B SOME (SO) 20-35% 36" end Larger C AND 35-50% BOULDER COUNT TRACE (TR.) 0-10% M-MEDIUM C-COARSE F/M-FINE TO MEDIUM F/C-FINE TO COARSE F/M-FINE TO COARSE F/ | | REMAR | KS: | | | | | | ,,- | 4 | |
| BOULDER COUNT SIZE RANGE LETTER CLESSFICATION DESCRIATION 6"-18" A 18"-36" B SOME (SO) 20-35% 36" end Larger C AND 35-50% BOULDER COUNT TRACE (TR.) 0-10% M-MEDIUM C-COARSE F/M-FINE TO MEDIUM F/C-FINE TO COARSE F/M-FINE TO COARSE F/ | | | | | | | - | | 1 | | _ |
| SIZE RANGE LETTER CLASSIFICATION DESIGNATI | D.OWG | TE | ST PIT PL | AN | District Control of the Control of t | PROPORTIONS USED | | ROTTAN | E | FASY | RT |
| 6"-18" A 16"-36" B SOME (SO) 20-35% F/M-FINE TO MEDIUM F/C-FINE TO COARSE V-VERY GRGRAY GRGRAY (HRS.) ELAPSED TIME TO READING G.W. (HRS.) | 1 | Ŧ | 8' | <u> </u> | SIZE RANCE LETTER CLASSIFICATION DESIGNATION | | C-COARSE | | l ö_ | DIFFICULT | |
| | 1 3032NY/M | Ŧ | | 3 | 16"-36" B | SOME (SO) 20-35% | F/CFINE VVERY GRGRAY BNBROW | to coarse n | READIN | 4G G.W. | • |

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| | Cook | | | | TEST F | PIT FIELD LOC | | | | | |
|-----|--|---|----------|-----------------------|--------------------------|--|------------------|---|------|------------------------------|--|
| | Foot of | George, In f Jersey Av City, NJ O | æ. | | DESCRIPTI | PROJECT ON Mosholu GC Bronx, NY | F | EST PIT N TLE No NATE | N | G-TP2- GTP299. Mar. 99 | 99 DWG |
| • . | ENGINEER | | | | OPERATOR | | 5 } | ROUND ELE TIME STARTE TIME CONPLE | | 94.84 915 3/ 030 3/ | 9/99 |
| | WEATHER | | Juliny | | CAPACITY O | 5 CU.VO. REACH 12 ft. | <u> </u> | | | | |
| | DEPTH | | ·· | | DESCRI | | ő | EXCAV. EFFORT | | OLASS | REMARK No. |
| | | | } | Тор | 8" topso | il, roots | 1 | £ | | | |
| | 1' — | 3' Wide | | | | | 8 | E | 4 | /A | |
| | 3 — | | | Yeli to | low-bn F- | C sand, some little to trace | | E | 2 | :/A | |
| | 3 | | | çla; | y, trace co -65) | obbles (SM) | i | м | | | |
| | 5' | | | | | - | | М | | | |
| • | _ 5 | } | | qro | ıvel, rock 1 | ty F—M sand, some fragments, possible | | м | | | |
| | 7' | | | - + sab | rolitic soil (| SM/GM) (6-65/5-65) | = | D | | S/A /B | Saproliti |
| | 8' — | | | Bol Sai | ttom of ex mple taker | ccavation 7 feet at 7 feet | J | * | | <u> </u> | |
| | | } | L | —— Ap | proximate | vertical walls | | | | | |
| H . | 9' | 1 | | | | | | | | | † |
| | 10' | 1 | | ٠ | | | | | 1 | | |
| | 11' | 1 | | | | | | | | | |
| * | 12'- | | | | | | | | | - 38 | |
| | 13' | 1 | | | | • | | | | | 1 |
| | 14'- | | | | | | | | - | - | 1 |
| | REMARK | S: Grai | ındwet | er not en | countered | | _ | -1 | _1 _ | | <u> </u> |
| | OWO 2002 AND AND AND AND AND AND AND AND AND AND | T PIT PLAI | 1 | BOULDE | END: R COUNT | PROPORTIONS USED | F-FII | EDIUM | ONS | E | TION EFFOR LEASY LMODERATE LDIFFICULT |
| | 37 | | | 6"-18" | A | LITTLE (U.) 10-20% | F/M- | Darse -Fine to Me -Fine to CO | | GROUI | DWATER |
| | NOLUME= | - <u>5.4 cu.</u> | <u>.</u> | 18"-36" 36" and La | B orger C | SOME (SO) 20-35% AND 35-50% | V-VE GR BN | | | ELAPSED READING (HRS.) | |

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| | TEST P | IT FIELD LOG | | | | |
|---|--|---|--|--|-------------------------------|--|
| Warren George, Inc. Foot of Jersey Ave. Jersey City, NJ 07303 | DESCRIPTIO LOCATION _ | PROJECT N Mashalu GC Bronx, NY | TEST PIT I | MG | -TP3-9 IP399,0 ir. 99 |)WG |
| ENGINEER R. Kantor WEATHER 35° F. Sunny | OPERATOR <u>J</u> MAKE <u>Nago</u> r | ON EQUIPMENT Smith Bros. ohn Smith no MODEL NS-35 5 CU.Yd. REACH 12 (t. | | 121 1ED 130 | 7.07 5 3/9 00 3/9 | /99 |
| DEPTH | SOIL DESCRIP | TION | EXCAV. EFFORT | BOUL COU QTY. C | NT | REMARK No. |
| 1' — 3' Wide | Top 8" topsoil | | E | 5/4 | | |
| 2' | Yellow-bn F-C to little silt, li | ttle to tr. clay | М | 1/A | | |
| _ 3' | | oist to wet (SM) | М | ļ | | |
| 4° | aravel, rock fr | F-M sand, some agments, possible M/GM) (6-65/5-65) | M | 3// | | |
| — 5' — Water at 5' \(\bar{\bar{\bar{\bar{\bar{\bar{\bar{\bar | | 7 | M/D | 6/ | Α | |
| — e, — | Bottom of exc | avation 5.5 feet | 0 | 1/6 | | Saprolitic Excavation |
| - r - <u> </u> | Sample taken Approximate v | | ļ | - | | refusal due to bedrock 9 5.5 |
| 8' | | | | - | | ļ |
| 9 | | | | +- | | <u> </u> |
| 10' | | | | + | | - |
| 11' | | | | | | |
| 12' | | | | + | <u></u> | 1 |
| 13'- | | | | | | |
| 14' | | | | | | 1 |
| REMARKS: 1. Reservoi 2, TP-5 al | r slob sawcut prior (lang perimeter wall. | to excavation | • | . • | | • |
| TEST PIT PLAN | BOULDER COUNT | PROPORTIONS USED TRACE (TR.) 0-10% | ABBREVIATI F-FINE M-MEDIUM | -FINE E | | ON EFFOR EASY MODERATE |
| 3. | SIZE RANGE LETTER CLASSIFICATION DESIGNATION 6"-18" A | LITTLE (U.) 10-20% | C-COARSE F/M-FINE TO M | | GROUN! | DIFFICULT DWATER |
| TEST PIT PLAN 1 8' | 18"–36" B 36" and Larger C | SOME (SO) 20-35% AND 35-50% | F/C-FINE TO C V-VERY GRGRAY BNBROWN YEL-YELLOW | E | LAPSED TREADING (HRS.) No Gro | TIME TO G.W. |

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| | | | | EST F | PIT FIELD LOC | } | | - | |
|---|--|---------------------|-----------------------------------|--------------------------------|---|------------------|-------------------------------|--|---|
| | Warren George, in Foot of Jersey A Jersey City, NJ (| ve. | | DESCRÍPTI | PROJECT ON <u>Masholu GC</u> Brook, NY | | TEST PIT N FILE No DATE | o. <u>MG-TP4-</u> <u>MGTP499</u> 9 Mar. 99 | .OWG |
| | ENGINEER R. Kar | ntor | | EXCAVA CONTRACTOR | TION EQUIPMENT Smith Bros. John Smith | | GROUND ELEV | 197.02 | |
| | WEATHER 38' F. | M. Clo | _ 1 | MAKE Nage | | <u>5</u> · | TIME COMPLE | TED 1500 3/ | 9/99 |
| | DEPTH | | SOIL D | | | | EXCAV. EFFORT | BOULDER COUNT GTY. CLASS | REMARK No. |
| | } | 1 | Тор | 8" topso | | | ε | 4/A | |
| | 1' — 4' Wide | | | | | | E | 6/A | |
| | 3' | | Yelio to li | w-bn F- ttle silt. | C sand, some trace clay, | | М | 3/A 2/B | |
| | 4'- | | little | cobbles | , | | м | 5/A 3/B | |
| | 5' | | | | | | М | 6/A 2/8 | |
| | Б' — | | | — | | | М | 10/A 4/B | <u> </u> |
| | - r - | | i, | | | | M | 8/A 4/B | Saprolitic |
| | 8' — | | Yello mico | ow-bn sili | ly F-M sand with agments, possible (SM/GM) (6-65) | | М | 11/A 3/B | |
| | g' | | 300 | Offic Soil | (2M/GW) (0-05) | | D | 10/A 3/B | |
| | 10' | | Bot! | om of a | cavation 10 feet | } | D | 9/A 2/B | ļ ! ——— |
| | -u' | | Son | iple taken | at 10 feet | | | | |
| - | 12' | | Арр | roximale | vertical walls | | | | |
| | 13' | - | | | | | | ļ | |
| | 14' | 6 2 ³ | | | | | <u> </u> | <u> </u> | |
| | DEMADUS. | | | - | | | | <u> </u> | |
| | REMARKS: Gro | undwat | er not enco | ountered | | | | | |
| | TEST PIT PLA | N | LEGE | | PROPORTIONS USED | AB | BREVIATIO | NS EXCAVAT | ION EFFORT |
| | £ <u>↓ - 8' - </u> | | BOULDER SIZE RANGE CLASSIFICATION | COUNT LETTER DESIGNATION | TRACE (TR.) 0-10% | | NE EDIUM DARSE | E | LEASY LMODERATE LDIFFICULT |
| • | | | 6"-18" | ٨ | UTTLE (U.) 10-20% | F/M- | -FINE TO ME! -FINE TO CO! | ARSE | DWATER |
| | VOLUME 11.85 a | ı.yd | 18"-35" 36" and Lar | B: | SOME (SO) 20-35% AND 35-50% | V-VE GR BN | | ELAPSED READING (HRS.) | |

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| | | TEST PI | T FIELD LOG | 15 200 | 200 | | 5000 D D |
|--|-------------------------------|--|-----------------------------|-----------------------|-----------------|------------------------------|--|
| Warren | George, Inc. | | PROJECT | TEST PIT | | TP5 | 99 |
| Foot of | Jersey Ave. City, NJ 07303 | DESCRIPTION | Moshelu GC | FILE No. | | TP599.[Mar. 99 | |
| Jersey (| aty, NJ 07303 | LOCATION _ | | _ DATE | | MUI. 83 | |
| ENGINEER | Kantor | EXCAVATION S | ON EQUIPMENT Smith Bros. | GROUND E | EV. 19 | 5.39 | |
| | | OPERATOR JO | hn Smith | TIME STAR | TED <u>08</u> | 315 3/1 | |
| | | MAKE <u>Nagon</u> | 0 MODEL NS-35 | TIME COMP | четео <u>10</u> | 00 3/1 | 10/99 |
| WEATHER | 24° F, P. Su | CAPACITY 0.5 | CU.Yd. REACH 12 ft. | | | | |
| DEPTH | | SOIL DESCRIP | ΠΟΝ | EXCAV. EFFORT | CO | ILDER UNT CLASS | REMARK No. |
| 0 | | Top 12" topsoil | | ε | | | 1' topsoi |
| 1' | 3' Wide | | | E | | | |
| 2' — | | Yellow-bn F-C | | E | | | <u> </u> |
| 3' — | | to little silt, lit cobbles, trace (SM) (6-65) | tte to troce clay, moist | E | | /A | |
| 4' — | | (5) (0-05) | 1 | м | 7, | /B /A | |
| 5' | | Yellow-bn silty | sand trace | M | 8, | /8 /A | Soprolitic |
| 6, — | | gravel, rock fro soprolitic soil | agments, possible | D | 11 | /B /A | Saprolitic |
| 7' — | | | avation 7 feet | - | 3 | /B | 2 dp. cutu |
| 8' — | 1 1 | Sample taken Approximate v | | - | | | |
| 9, — | 1 | 1,440.000.000 | or trous | | _ | * | |
| 10'- | 1 | | | - | | | |
| 11'- | - | | | | | - , | |
| 12'— | - I | | | | | | + |
| 13' | - | | | - | | | + |
| 14' | - [| | | | | | |
| | <u> </u> | | | | | _ | <u> </u> |
| REMARK | S: Groundwo | oter not encountered | | | | | |
| | | | | ······ | | | |
| TES | ST PIT PLAN | LEGEND: BOULDER COUNT | PROPORTIONS USED | ABBREVIA | NTONS | EXCAVAT | TION EFFOR LEASY |
| | 8' | SIZE RANGE LETTER CLASSIFICATION DESIGNATION | TRACE (TR.) 0-10% | M-MEDIUM C-COARSE | | M D GROUI | _MODERATE _DIFFICULT NOWATER |
| 3' 8 | | 6"-18" A | UTTLE (LL) 10-20% | F/M-FINE TO | | | |
| DANGLESSE TO SEE THE S | | 18"-36" B 36" and Larger C | SOME (SO) 20-35% | V-VERY GRGRAY | - yerklek | ELAPSED READING (HRS.) | TIME TO G.W. |
| VOLUME | = <u>6.22 cu.yd.</u> | - Und Caryon C | AND 35-50% | BNBROWN YEL-YELLOW | | (una.) | |

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| Warren George, Inc Foot of Jersey Av Jersey City, NJ 07 | DESCRIPTION DESCRIPTION B | ronx. NY | | MG-TP6- MGTP699, 10 Mar. 99 | OWG |
|---|--|--|--|-----------------------------------|----------------------|
| ENGINEER R. Kont | OPERATOR John | N EQUIPMENT mith Bros. n Smith MODEL NS-35 cu.yd. REACH 12 ft. | GROUND ELEV. TIME STARTED TIME COMPLETI | | 10/99 10/99 |
| DEPTH | SOIL DESCRIPT | TON | EXCAV. EFFORT | BOULDER COUNT QTY. CLASS | REMARK No. |
| | Top 5" topsoil | | E | | |
| 1' 3' Wide | | | E | | |
| _ 3' _ | Yellow-bn F-C s to little silt, tro | ce clay, little | £ | 7/A 1/B | |
| 4' | to trace cobbles | s, moist (SM) | E · | 3/A | |
| 5' | | | E | 4/A | |
| 6' — | | | E | 4/A | |
| 7' | | j e | E | 6/A | |
| 8' — | Yellow-bn silty i | F-M sand, trace | М | 8/A 1/B | |
| 9' | to some gravel, saprolitic soil (S | cobbles, possible | М | 12/A 1/B | |
| 10' | | | 0 | 11/A 1/B | Saproli |
| 11' | Bottom of exca Sample taken a | | | <u> </u> | |
| 12' | Approximate ver | rtical walls | | | |
| 13'- | | | | | - |
| 14' | | | | | _ |
| REMARKS: Grou | ndwater not encountered | | | | <u> </u> |
| TEST PIT PLAN | BOULDER COUNT | ROPORTIONS USED TRACE (TR.) 0-10% | ABBREVIATION | E | EASY MODERAT |
| TEST PIT PLAN | CLASSIFICATION DESIGNATION 6"-18" A | UTTLE (U.) 10-20% | C-COARSE F/M-FINE TO MEI F/C-FINE TO COA | GROUN ARSE | DIFFICULT IDWATER |
| NOLUME = 10,00cm | 36" and Larger C | SOME (SO) 20-35% AND 35-50% | VVERY GRGRAY BNBROWN YELYELLOW | ELAPSED READING (HRS.) | |

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| | TEST PIT FIELD LOG | | | |
|---|--|--|--|--------------------------------------|
| Warren George, Inc. Foot of Jersey Ave. Jersey City, NJ 07303 | PROJECT DESCRIPTION Mosholu GC | TEST PIT N. FILE No DATE | o. <u>MG-TP7-</u> MGTP799. 10 Mar. 99 | DWG |
| ENGINEER R. Kantor WEATHER 38 F. M. S | EXCAVATION EQUIPMENT CONTRACTOR Smith Bros. OPERATOR John Smith MAKE Nagano MODEL NS-35 CAPACITY 0.5 CU.Vd. REACH 12 ft. | GROUND ELEV TIME STARTED TIME COMPLE | 4740 7 / | 10/99 |
| DEPTH | SOIL DESCRIPTION | EXCAY. EFFORT | BOULDER COUNT QTY. CLASS | REMARK No. |
| 0 | Top 6" topsoil, roots | E | 2/A 1/C | Lg. boulder just below surface |
| 1' 4' Wide | | E | 5/A | |
| 2' | Yellow—bn F—C sand, some silt, trace clay, little to | E | 7/A | |
| 3' | trace cobbles, moist (SM) (6-65) | М | 11/A 1/B | |
| 5'- | | М | 8/A | |
| 6' | | М | 7/A | |
| 7' | | . м | 10/A 1/B | |
| 8' | | D | 12/A 2/B | |
| 9' — | | D | 12/A 3/B | |
| 10' | Bottom of excavation 9 feet Sample taken at 9 feet | | <u> </u> | |
| 11' | Approximate vertical walls | | <u> </u> | <u> </u> |
| 12'- | | - | | |
| 13'- | | | | |
| 14' | : | | | |
| 1 1 1 | | | 1 | |
| | water not encountered quantity of boulders than in previous test pit | s. | | |
| TEST PIT PLAN | TRACE (TRACALOR I. | ABBREVIATI FINE 1-NEDIUM | E | ATION EFFOR EASY MODERATE |
| 4 | CLASSIFICATION DESIGNATION UTTLE (U.) 10-20% | C-COARSE F/M-FINE TO N | IEDIUM | DIFFICULT UNDWATER |
| TEST PIT PLAN 1 9' | 18"-36" B SOME (SO) 20-35% 36" and Larger C AND 35-50% | F/C-FINE TO C V-VERY GRGRAY BNBROWN YEL-YELLOW | ELAPSE READO (HRS.) | |

| 1 | | TEST PIT FIELD LOG | | |
|----------|---|--|--|---|
| | Warren George, Inc. Foot of Jersey Ave. Jersey City, NJ 07303 | PROJECT DESCRIPTION Mosholu GC LOCATION Broox, NY | TEST PIT No. MG- FILE No. MGTI DATE 11 MG | P1099.DWG |
| 1 | ENGINEER R. Kantor WEATHER 38° F, Sunny | EXCAVATION EQUIPMENT CONTRACTOR Smith Bros, OPERATOR John Smith MAKE NOGORO MODEL NS-35 CAPACITY 0.5 CU.Yd, REACH 12 ft. | GROUND ELEV. 168. TIME STARTED 1039 TIME COMPLETED 1145 | 3/11/99 |
| | | DESCRIPTION | EXCAV. BOULD | IT NORMAN |
| | 3 Wide | Top 10 ^N topsoil | £ | Topsoil |
| - | — 1' — Water seeping at 2' — 2' — 2' — ₩ | | E 6/A | Fill material |
| | | 10"-5" Brown F-C sand, some to little sit, little to trace | E 5/A | |
| | | cobbles, trace clay, ash, brick fragments, moist to wet (fill) | E 7/A | <u> </u> |
| | 5' | | E 6/# | SHE GEHSE |
| 1 | ├ 6' | 5'-7.5' Gray-bn mottled F-C sand, little to trace silt, trace | 1/B | 3 |
| | 7- | cobbles, trace clay, micaceous, moist to wet (SM) (7-65) | D 6/2 | |
| • | 8' — | Bottom of excovation 7.5 feet Sample taken at 7.5 feet | | |
| - | 9' — | -Approximate vertical walls -Unstable walls at 2–5 feet | | |
| | 10' | | | |
| = | 11' | | | |
| | 12' | | | |
| 9 | 13' | | | - |
| | 14' | | | |
| 1 | REMARKS: | | | |
| 1 | TEST PIT PLAN BOL | RANGE LETTER TRACE (TR.) 0-10% | F-FINE M-MEDIUM C-COARSE | KCAVATION EFFORE E |
| 3 3 | 18" | -18" A UTILE (U.) 10-20%36" B SOME (SO) 20-35% and Larger C AND 35-50% | V-VFRT | ELAPSED TIME TO READING G.W. (HRS.) |