MTA Maryland

MARYLAND TRANSIT ADMINISTRATION
MARYLAND DEPARTMENT OF TRANSPORTATION
Martin O'Malley, Governor • Anthony G. Brown, Lt. Governor
Beverley K. Swaim-Staley, Secretary • Ralign T. Wells, Administrator

March 3, 2010

Dr. Royce Hanson
Chairman, Montgomery County Planning Board
Maryland National Capital Park and Planning Commission (M-NCPPC)
8787 Georgia Avenue
Silver Spring, MD 20910-3760

Dear Dr. Hanson:

The Maryland Transit Administration (MTA) appreciates the opportunity to provide responses to comments submitted on Montgomery County's Purple Line Functional Plan. MTA values public involvement and encourages the public to provide input as an important component of the project development process.

In an effort to better inform the Planning Board as the plan is finalized, MTA is providing responses to the major and most frequent comments received at either the hearing or subsequently submitted in writing. I would note that we already have coordinated closely with M-NCPPC staff during the preparation of their February 24th report on the Functional Plan. Further, we urge the Planning Board to consider MTA's comments, which are attached, as part of the decision making process during the upcoming working sessions.

Many of our responses are to comments that MTA has addressed in the past as a part of the Purple Line Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) process or through our numerous meetings with residents and community groups. However, MTA always appreciates the opportunity to better inform the public on project specific issues and provide the latest information available on the Purple Line.

Thank you again for seeking MTA input on this important effort. We have enjoyed a close working relationship with your transportation and community planning staff throughout the planning process for the Purple Line study. MTA commends M-NCPPC's staff for the valuable input and assistance they continue to provide on the Purple Line, especially in our community outreach efforts. Please do not hesitate to contact me at 410-767-3694, if you have any further questions or need additional information.

Sincerely,

Michael D. Madden
Chief, Project Development
Office of Planning

Attachments

cc: Thomas Autrey, Transportation Planner, M-NCPPC
David Anspacher, Senior Planner, M-NCPPC
Katherine Holt, Transportation Planner, M-NCPPC
Gary Erenrich, Special Assistant to Director, Montgomery County DPT

Responses to Comments on the Purple Line Functional Plan (M-NCPPC)

The Purple Line Functional Plan was drafted by the Montgomery County Planning Department with the stated goal of "identifying the specific alignment and station locations within the County so that existing and future master, sector, station area, and other plans will have the benefit of adopted policy as to the location, mode function, and general operational characteristics of the Purple Line"[1].

The Montgomery County Planning Board held a December 10, 2009 public hearing where they accepted oral and written testimony from anybody who had an interest in the plan. All testimony will be considered by the Montgomery County Planning Board as it provides direction to transportation planners during upcoming March work sessions. The Board-approved version of the plan will go to the County Council for final review and eventual adoption.

MTA Responses to Comments Submitted

In an effort to better inform the Montgomery County Planning Board as you finalize the plan, the Maryland Transit Administration (MTA) is providing responses to some of the most frequent comments submitted at either the hearing or subsequently submitted in writing. The following comments may be used by the staff and Planning Board in written responses or in the decision-making process during the upcoming working sessions.

Comments concerning loss or lack of access to the Capital Crescent Trail; comments that the current level of access to the trail needs to be maintained

MTA shares in the desire to provide good access for the surrounding communities to the permanent Capital Crescent Trail that will be built as part of the Purple Line project. The design of the trail is being developed to maintain all formal access points and MTA is investigating additional access points at the suggestion of the County and local community members. MTA does recognize that the informal access from individual private properties will not be retained in all areas.

Comments stating the safety will be diminished with transit running along the Capital Crescent Trail especially for people who will have to cross the tracks to walk to school, work or for recreation

Safety is a critical concern in the development of the entire 16-mile Purple Line project. Light rail transit systems are designed to be pedestrian-friendly facilities that fit into urban and pedestrian environments. This has proven to be the case in a growing number of cities in this country (such as Portland, OR, Charlotte, NC, Houston, TX, and Phoenix, AZ) and many cities and towns in Europe. Light rail lines do not travel with the high speeds of Amtrak, Metrorail, or

[1] Purple Line Functional Master Plan, November 2009. Montgomery County Planning Department. Pg. 7.

commuter rail services such as MARC. Pedestrian crossings of a transit line occur along many transit systems operated throughout this country and the world. Where necessary or appropriate, safe crossing points that are clearly marked would be provided for children who need to cross the transitway for school or other activities. When operating on existing roadways the light rail vehicles would obey all traffic laws and speed limits and would operate just as regular vehicular traffic is required to do within high pedestrian areas.

There are many examples where a converted rail corridor has been built to accommodate both transit and a parallel hiker/biker trail. For the Purple Line, MTA is continuing to work closely with Montgomery County, who will own and operate the permanent trail between downtown Bethesda and the Silver Spring Transit Center, trail users; trail advocacy groups; and adjacent communities to design the trail connections in a safe manner with good visibility and clearly marked crossings. MTA is committed to continuing to work with the County and the community in developing safe paths of travel for those walking to school, work or recreation.

Comments the Capital Crescent Trail needs to be preserved

MTA fully recognizes the importance of the Capital Crescent Trail to a variety of users and as a community asset. The MTA is keenly aware that this trail is used for recreation, commuting and travel, and every effort is being made to provide for a safe and enjoyable experience for all users and the greater community.

Included in the Locally Preferred Alternative (LPA) for the Purple Line is the construction of a permanent trail facility alongside the transitway between Bethesda and the Silver Spring Transit Center. This trail would be built following Montgomery County standards for trail design; a 10-foot-wide minimum paved trail with 2-foot shoulders. Between Pearl Street and of the vicinity of Jones Mill Road the trail would be on the north side of the transitway; elsewhere it would be on the south side. Access to the trail would be provided at various points along the way, as would crossings over or under the transitway. The MTA has set a goal of maintaining a landscaped buffer of approximately 10 feet between the trail and the transitway and, wherever possible, the trail would be built at a slightly higher elevation than the transitway. A barrier, either a fence or a wall, would separate the trail and transitway. The trail would continue from Jones Mill Road to the Silver Spring Transit Center. The trail would cross the CSX right-of-way on a new pedestrian bridge near the existing Talbot Avenue bridge. After crossing the CSX right-of-way the trail would continue on the north side to the Silver Spring Transit Center.

The MTA is confident that the plans for the light rail system under development for the Georgetown Branch Master Plan alignment will ensure the continued viability of the trail.

As requested by Montgomery County, and supported by many trail users, MTA will be working closely with the County and M-NCPPC, as well as local communities, to assess and consider widening the trail to 12 feet, and even up to 16 feet in certain locations. However, we are concerned that a widening of the trail would reduce the amount of buffer and landscaping between the transitway and trail. Such implications will be a key part of this analysis.

Comments opposing the Functional Master Plan due the loss of trees along the Capital Crescent Trail

MTA recognizes the community's concern regarding the removal of existing trees along the Capital Crescent Trail. Although along certain portions of the right-of-way the majority of trees will need to be cleared, every effort will be made to minimize the loss of trees and to maximize the replanting of native vegetation. In certain areas, while trees will be lost within the County's right-of-way, the tree coverage will remain within the adjacent properties.

MTA will be following the stringent requirements of the Maryland Forest Conservation Act and will be replanting trees. Where possible these will be in the Georgetown Branch right-of-way. MTA believes that the Purple Line will ultimately provide a greater benefit as it is the only major opportunity to improve east-west transportation inside the Capital Beltway. On an environmental level, the project will support Smart Growth initiatives and improve regional air quality by getting people out of cars and onto transit.

Comment regarding increases in noise and vibration levels along the alignment; comments that the previous noise analysis was performed inaccurately

MTA recognizes the potential for increases in noise and vibration levels along the alignment and has performed detailed analysis of current and future noise and vibration levels in the corridor as part of the AA/DEIS process. As part of that process and as required by FTA, where projected noise levels could exceed FTA standards, the MTA will continue further developing noise and vibration mitigation strategies to eliminate or reduce impacts to acceptable levels.

In response to the comment that noise analysis was performed inaccurately or equipment was not properly calibrated, the MTA does not agree with these assertions. All noise analysis and monitoring was performed to FTA requirements and industry accepted standards. All noise monitoring equipment used in this analysis, whether owned or rented, is calibrated annually by a certified acoustic laboratory. The calibration certificates for the equipment have been made available. Furthermore, prior to starting a noise measurement at each noise monitoring site a manual calibration using a pure tone calibrator (also calibrated annually) is performed to ensure accurate collection of noise monitoring data at each location.

Along the Georgetown Branch (3.2 miles) portion of the project, MTA's noise analysis shows that the project-generated noise levels are estimated to be 5 to 6 dBA below the minimum noise level that would result in a noise impact. Specifically, the abatement measures integrated into the design along this alignment ensure a quiet operation with no noise impacts to adjacent residents. The measures incorporated into the project design include train skirts on the light rail vehicles and retaining/sound walls.

It should be noted that the MTA will be performing additional noise analysis for the Final Environmental Impact Statement. This analysis will reflect the refined alignment that results from the completion of preliminary engineering and will reflect more precise alignment design, track design and vehicle specifications. In addition these noise impact assessments would reflect the use of planned mitigation. Noise measurements would also be taken at more locations in the corridor.

Comments either supporting or opposing a station at Wayne Avenue and Dale Drive

The Dale Drive Station on Wayne Avenue in Silver Spring has been the subject of much discussion. MTA recognizes that some members of the local community have been opposed to the station; generally because of fears that the area would be rezoned to permit denser development. As part of the Purple Line ongoing public outreach efforts and the Purple Line Functional Master Plan process, there has also been strong community support for the station, including a letter signed by 177 residents. One of the key reasons explained behind this growing support is the improved accessibility that a station at Dale Drive will provide to the community. Further, MTA recently has received emails from over 30 residents of the Silver Spring community who expressed their strong support for having a Purple Line station at Dale Drive.

The Montgomery County Planning Board has recommended dropping the station, or at least deferring its construction. The County Council concurred with this, but recommended that the Purple Line be designed and built so that the station could be added sometime in the future without having to acquire additional land. This position is currently reflected in Locally Preferred Alternative (LPA).

Consistent with the Locally Preferred Alternative, the Dale Drive station will continue to be studied. Should this station be built, it will be important that the planning and environmental analysis are completed and understood, which MTA is working on in coordination with Montgomery County. Additional refinements and updates to the regional travel forecasting model, which are being made as part of MTA's current studies, may provide more information regarding anticipated ridership at the Dale Drive station. Once available in the very near future, MTA will be sharing this information with Montgomery County and the Silver Spring communities as the possibility of this station is considered further.

It is MTA's position that concerns about increased development around the station are unfounded as stated on many occasions by Montgomery County planning staff. In addition, the benefits to the community of having the Dale Drive station, in the form of local access, increased ridership, and improved project cost-effectiveness, are substantial. Currently, the area around the proposed station is largely developed with predominantly single family residential properties. MTA understands that the Montgomery County has no plans for redevelopment in this area. MTA strongly supports the construction of the Dale Drive Station, preferably in the initial construction of the Purple Line.

For a more detailed analysis of the merits of a Dale Drive Station please go to the Purple Line website at: http://www.purplelinemd.com/additional-studies

The selection of LPA and subsequent Purple Line Functional Master Plan did not address the impacts of BRAC at the National Naval Medical Center (NNMC)

The potential impacts of BRAC have been fully assessed in the ridership, demand, and traffic modeling contained in the AA/DEIS. The AA/DEIS used the most current land use forecasts for employment, households and population available at the time of the analysis. These models have and will be updated as new modeling rounds are produced by the MPO. However, the MTA did

look at specific increases projected due to BRAC, and this analysis was detailed in the AA/DEIS and the resulting analysis has been posted on the Purple Line website.

The Bethesda CBD area exists today, and will continue in the future, as a major employment and population center exclusive of the BRAC changes. Combined employment around the Medical Center Metro Station is expected to grow by over 6,000 jobs to 2030 and population is expected to grow by approximately 700 in that time. The Bethesda CBD is expected to grow by 5,000 jobs and show a population increase of over 12,000 residences in that same period. The BRAC changes, while large, are a small percentage of the expected 72,000 jobs in the Bethesda CBD / Medical Center area in 2030. Projections for daily Purple Line ridership by both Medical Center employees, and patients and visitors are less than 250.

In addition, the congested traffic conditions expected along Jones Bridge Road would contribute to travel delays to trips arriving from the east. Given the travel time savings from using the Georgetown Branch right-of-way, the most efficient trip would be to use the Georgetown Branch right-of-way, and then transfer to the Red Line. This trip, which would be provided under the LPA, would be faster than the travel time for the Low Investment Bus Rapid Transit Alternative (using a Jones Bridge Road alignment) assessed in the AA/DEIS. Moreover, the attractiveness of travel to and from the Bethesda CBD from the east would be expected to be significantly affected with the significant travel delay associated with travel along a slower Jones Bridge Road alignment.

Therefore, given the access afforded by Purple Line alternatives along the Master Plan alignment and connecting the Metrorail Red Line to the Medical Center Station, the impacts of BRAC on travel in the Bethesda area are notable more for the additional delays expected on area roadways than for the potential contributions to Purple Line ridership.

For a more detailed analysis of the implications of BRAC please go to the Purple Line website at: http://www.purplelinemd.com/additional-studies

Comments the Functional Master Plan ignores or does not address environmental impacts on Capital Crescent Trial including loss of greenspace, wildlife habitat, and loss of recreational opportunity

MTA has fully considered environmental impacts and concerns in the development of the alternatives. This assessment was part of the Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) and will be further addressed in the Final Environmental Impact Statement. Every effort to minimize impacts will continue to be included in the alternatives and mitigation measures for unavoidable impacts will be developed and included in the project.

Comments concerning construction impacts including: access to Capital Crescent Trail, closure duration of trail, construction access onto private property

The construction of the Purple Line has the potential to cause temporary impacts to the surrounding environment and communities. Typical short-term construction impacts could

include noise, vibration, air quality, access, and traffic detours. If properly planned, construction impacts to neighborhoods, businesses, and the natural environment can be minimized.

Specific to the Georgetown Branch Interim Trail, portions of the trail will need to be closed during construction. This is due to the construction of the transitway and reconstruction/relocation of the trail and is needed for the safety of trail users. Detailed construction phasing will be developed during final design and will determine the extent (limits) and duration of the trail closures. Every effort will be made to minimize these closures. Appropriate signing and notices will be used to notify people of the closures and detours.

Comments questioning why and how the decision to place the Capital Crescent Trail on the north of the transitway in Bethesda-Chevy Chase was made

The Georgetown Branch Master Plan Amendment (1990) called for what would become the Capital Crescent Trail to be located on the south side of the future transitway. During the alternatives analysis phase of the Purple Line study, public comments led to an effort to take a closer look at the trail and transitway to see if locating the trail on the south side was the best choice.

There were two objectives to MTA analysis which was carried out in early 2007. The first was to determine the best location for the trail - north side versus south side of the transitway and to determine if the separation between the trail and transitway could be increased to provide a larger landscaped buffer to improve the quality of the trail.

Under the first objective, the major factor that influenced the preferred location of the trail was locating the trail closer to the existing elevation of the surrounding land while keeping it three to four feet above the transitway, where possible. The intent was to provide a vertical separation between the trail and the transitway thus resulting in a number of benefits for the trail users including:

- improves aesthetics and places the trail more on the natural lay of the land
- minimizes retaining wall heights and thereby reduces construction costs
- minimizes environmental and construction impacts
- creates a greater comfort level when a vehicle passes trail users
- limits pedestrian at-grade crossings to the designated crossings

The analysis determined that the preferred location of the trail is a combination of the north side and the south side because it provides the desired vertical separation while keeping the trail closer to the existing elevation of the surrounding land. In the Bethesda-Chevy Chase area the preferred location is on the north side of the transitway from Pearl Street in Bethesda, east through Columbia Country Club and across Connecticut Avenue, to a point just south and west of the Jones Bridge Road/Jones Mill Road intersection where the trail crosses to the south side before going under Jones Mill Road. From there it then remains on the south side, due to the location of the maintenance yard in Lyttonsville.

The second objective of this analysis was to evaluate the possibility of increasing the horizontal separation between the trail and the transitway for both trail options; trail on the north side of the transitway and the trail on the south side of the transitway. The ideal separation distance in this case would be 25' from the centerline of track to the edge of the trail resulting in approximately 10' wide planting area. The increased planting area would act as a screen or buffer between the trail and transitway as well as improve the aesthetics of the trail. The right-of-way along this alignment has a number of different widths, ranging from 60 feet to 225 feet.

The analysis indicated that we can achieve ideal separation distance for both trail options when along the 100 foot right of way, where the Columbia County Club abuts the right-of-way. In the area of the 225 foot right-of-way, the trail and transitway cross over Rock Creek and both trail options could achieve the ideal separation distance. The alignment after Rock Creek has a right-of-way of 65 feet that then drops down to 60 feet. The separation along this segment of the alignment cannot be improved because part of the proposed Yard & Shop Facility lies within this right-of-way.

However, the area along the interim trail with the greatest possibility of increasing the separation occurs within the 66 foot right-of-way at the western end of the alignment. Even though the north side within the 66 feet right-of-way has a shorter planting length, its planting width has a consistent and wider width - on the average of 9 to 10 feet.

In reviewing the analysis, MTA has determined that locating the trail on the north side of the transitway in this section is the preferred location. The advantages of this location include increased separation distance, presenting the trail in a more naturalistic environment, providing the opportunity to buffer/screen the trail from the track with vegetation, minimizing retaining wall heights resulting in reduced construction costs, preventing the trail users from feeling overwhelmed when a vehicle passes them, and increased safety by preventing trail users from crossing the transitway except at the designated crossings. MTA has presented our analysis and findings to the community at many Purple Line meetings, beginning in March 2007.

It is further noted that the placement of the trail along the north side of the transitway would not affect the analysis and findings of MTA's noise studies. Some comments submitted expressed the view that noise impacts to residents of the Town of Chevy Chase would be reduced if the trail were located along the south side of the transitway, instead of on the north side, along this portion of the project. As shown in the AA/DEIS Noise and Vibration Technical report and as explained in the above discussion regarding noise and vibration, no noise impacts along the Georgetown Branch right-of-way are projected, regardless of whether the trail is located north or south of the light rail tracks.

Comments that the transitway and trail alignment pass too close to Rosemary Hills Elementary School

MTA has met with representatives from Rosemary Hills Elementary School to discuss their concerns and review the current conceptual plans for this portion of the alignment. As a result of these discussions, MTA is developing options that take the trail across the CSX tracks prior to

the Talbot Avenue Bridge thus significantly reducing impacts to the school. These options will be reviewed with the County and presented to the school at follow-up meetings. We are confident that we will be able to modify the alternative to minimize impacts to the school property and look forward to continued coordination on this issue.

Comments that a double tracked alignment was not part of "Master Plan" and there is not enough right-of-way for a double track alignment.

The Georgetown Branch Master Plan Amendment (1990) called for segments of both single-track and double-track transit on the former railroad right-of-way. However, as part of their review of the Purple Line AA/DEIS, the Montgomery County Council and Executive endorsed and recommended the Medium Investment Light Rail Transit (LRT) alternative, with a double-track segment running along the Master Plan alignment between Silver Spring and Bethesda, for the Purple Line locally preferred alternative.

In their LPA endorsement, the County Council and County Executive, asked the MTA to study if there were opportunities for single-tracked segments in the far western portion of the alignment. There are several issues outlined below that need to be considered when looking at why the entire length of the Master Plan alignment is proposed to be double-tracked.

- **Use of Single-Track in Other Systems**: Several LRT systems have been built initially as single-track systems. All of these systems have eventually been double-tracked at a greater monetary cost with significant adverse impacts, including disruptions to service, decreases in ridership and degradation of service reliability.

- **Headway Impacts:** By using a single-track system, headways would be reduced to a point where capacity becomes constrained by almost 20 percent with no future opportunity to increase capacity.

- **Service Reliability Impacts:** East of Silver Spring, the Purple Line is a mostly at-grade route within or along existing roadways. Therefore, operations along these portions of the project would be subject to traffic signal and other traffic-related impacts. Any delay would have significant impacts on the operations of the single-track segment resulting in delays that would cascade through system, resulting in poor reliability.

- **Maintenance Impacts:** Another significant issue would be system maintenance with only a single-track section. With a second track, routine maintenance could be performed on one track during daylight hours while running service on the second track. Along a single-track segment maintenance would have to be performed when service is not operating thus decreasing the time frame which maintenance can be performed and potentially creating noise and other impacts to the surrounding communities.

- **Reduction in Tree Loss:** It is expected that to construct the trail and either a single-track or double-track transitway most of the trees would need to be removed. While new trees and landscaping would be replanted when construction was completed, the hoped-for

intent that building a single-track segment would reduce the amount of tree clearance would not likely be achieved.

In sum, introducing a single-track segment would significantly compromise travel time savings, service frequency, passenger carrying capacity, and the maintenance and operating reliability of the Purple Line. For a more detailed analysis of single tracking along the Georgetown Branch right-of-way please go to the Purple Line website at: http://www.purplelinemd.com/additional-studies

Comments that the project is too costly for the benefits it will produce

The Purple Line will be an expensive transportation improvement, but transportation projects are long-term investments in our communities, and we believe that this project will help to alleviate long term problems faced by the Washington region and communities within the corridor by providing a fast, reliable alternative to the private automobile. As our understanding of the severity of global climate change increases and the need for Smart Growth increases, the benefits associated with projects like the Purple Line grows.

We believe that effective mass transit is one tool in addressing the worsening congestion and growing number of residents and jobs in the D.C. metropolitan area.

The Purple Line is the next generation of transit in Maryland and will support a more sustainable future for our State. Transit provides an alternative to the private automobile; helps reduce auto emissions; focuses development in our Priority Places; and helps to protect and preserve our precious natural resources, particularly the Chesapeake Bay.

As we face the ever more congested roadways that result from the continued growth of jobs and population in the Washington metropolitan areas, this project will support the achievement of our goals for a smarter, greener, more sustainable Maryland. By providing fast reliable transit services for our residents and employers the Purple Line will enhance the communities it serves, supporting community revitalization and helping us to grow smarter.

Comments that ridership estimates use speculative and unreliable data; The proposed system is "bloated" with stations to artificial inflate ridership and the attractiveness of the system

The ridership estimates for the Purple Line AA/DEIS and subsequent analyses were prepared in accordance with Federal Transit Administration (FTA) guidance by professionals with decades of experience on similar projects around the country. The tool used for the Purple Line ridership forecasts is based on the Metropolitan Washington Council of Government's (COG) regional travel forecasting model, enhanced for corridor level transit analyses as a key part of the Purple Line study process. The demographic input to the model, the current and future residential and employment estimates, which are the primary factor in the model's travel patterns and ridership estimates -- are also from COG. These estimates are based on input from local governments.

For the Purple Line, these demographic forecasts were based on input from the M-NCPPC for Montgomery and Prince George's Counties. The ridership forecasts are based on the best information available and using the most current industry accepted practice tools applied by experienced professionals. While any forecast contains some uncertainty, to call them speculative is a mischaracterization.

The Dale Drive Station was included in the Purple Line AA/DEIS Transportation System Management (TSM) Alternative and all of the BRT and LRT alternatives. The number of stations for a 16 mile line is comparable to similar light rail transit lines in the country, resulting in about a ¾-mile station spacing. The station placement and spacing was designed to provide convenient walk access to the BRT and LRT line alternatives. The light rail alignment selected as the Locally Preferred Alternative provides substantial travel benefits over the future local bus-based service.

Comments that the proposed shared trail/transit tunnel is Bethesda is unrealistic

In response to a request by Montgomery County, MTA developed concept plans which include locating the trail under Wisconsin Avenue, the Apex Building and the Air Rights Buildings in a shared tunnel with the Purple Line transitway. While this is challenging from a design perspective, it would provide trail users with an unimpeded path rather than traveling on local streets. Many trail users and trail advocacy groups strongly support extending the future Capital Crescent Trail to be built with the Purple Line, through the existing tunnel in Bethesda.

Current plans include the location of the trail above the transitway through the tunnel. MTA continues to work with the owners of the structures above the tunnel right-of-way to maximize the width and vertical clearance for the trail, providing a trail between 16' to 20' wide with a vertical clearance that varies from 8'± to 13'±. The grade for the trail from the west end of the Apex Building to the east end of the Air Right Building is essentially level, with a maximum grade at less than 2%. The steeper grades for the trail switch back located at the west end of the Apex Building were designed as part of the proposed Woodmont East Development.

Comments that the Purple Line alignment should be on I-495 (The Beltway)

The Metrorail Loop alignment was proposed by Montgomery County Executive Duncan in January 2003. This proposed Metrorail (heavy rail) alignment would have extended from the existing Medical Center Metrorail Station in Bethesda north via a tunnel under the Capital Beltway and along the north side of the Beltway, primarily on an aerial structure. It would then cross back over the Beltway, continuing south along the Metropolitan Branch CSX corridor either in a retained cut or in a tunnel to the Silver Spring Transit Center (SSTC). This alignment would be a continuation of the Metrorail Red Line and, as such, it would have been heavy rail and would not have continued past the Silver Spring Transit Center in the same mode.

Both the MTA and M-NCPPC carried out assessments of this proposed alignment. The MTA concluded that while the Metrorail Loop could improve operations and provide redundancy for the Metrorail Red Line; these advantages would not have applied to the Purple Line corridor as a whole. Implementation of the Metrorail Loop would not have addressed the issues of system connectivity, mobility, accessibility, and efficiency for the entire corridor that are part of the

Purple Line Purpose and Need. Passengers traveling between the Metrorail Loop and destinations east of Silver Spring would have been required to transfer from the Metrorail Loop to BRT or LRT to complete their travel farther east. This alignment would not have provided continuous service for destinations between Bethesda and New Carrollton and would not have addressed the issues of an inadequate and slow-moving transportation network for east-west travel between Bethesda and New Carrollton.

Further, substantial natural and human environmental impacts are associated with the Metrorail Loop option. This alignment would have required acquisition of right-of-way from Rock Creek Park along the Capital Beltway. This alternative would have also required property from approximately 25 residences along the CSX right-of-way. The Metrorail Loop would not have supported economic and community development west of Silver Spring because there would be no stations at the Chevy Chase and Lyttonsville communities. Moreover, this alignment would have been a less cost-effective solution to addressing the transportation problems and needs associated with the Purple Line corridor compared to a BRT or LRT alternative for the entire 16-mile corridor.

In January 2003, M-NCPPC issued a report recommending that the Metrorail Loop not be carried forward for further study. While recognizing the benefits to the existing Metrorail system, M-NCPPC recommended that the proposal not be carried forward due to a number of considerations. These included: the high cost of the project (estimated at twice that of the Purple Line), lower cost-effectiveness, greater impacts to the natural environment, the inability to serve communities between Bethesda and Silver Spring, and impact to the outer Red Line stations (stations north of Medical Center and Silver Spring).

MTA Responses to Noise and Vibration Questions Submitted by Mary Anne Hoffman

MTA Comment: It should be noted that the MTA will be performing additional noise analysis for the Final Environmental Impact Statement. This analysis will reflect the refined alignment that results from the completion of preliminary engineering and will reflect more precise alignment design, track design and vehicle specifications. In addition these noise impact assessments would reflect the use of planned mitigation. Noise measurements would also be taken at more locations in the corridor.

1. **Not a single sound measurement was taken within the Town of Chevy Chase**. The 60 dBA of ambient noise attributed to the Town was synthesized from two uncharacteristic points elsewhere: the intersection of Montgomery Avenue with East-West Highway ("B") and near Connecticut Avenue at the intersection of the Columbia Country Club with Jones Bridge Road ("N-10A"). The interpolation within the Town was justified because of "similar traffic and geographic conditions" that prevail both along the Capital Crescent Trail within the Town and at these two sampled points. We do not believe that this is correct. If measured in accordance with the *FTA Handbook*, ambient day-night L_{dn} noise in the Town of Chevy Chase would be less than 50 dBA, not 60.

MTA Response: The Purple Line alignment runs along the Interim Georgetown Branch Trail which borders the Town of Chevy Chase. It is not necessary that noise measurements be collected within the Town of Chevy Chase borders. However, what is critical is that noise measurements be taken along noise-sensitive sites located in the immediate vicinity of the Purple Line alignment. This is the standard procedure described by FTA. Twenty-four noise readings were collected at Site "N-B" and Site "N-10A" both reasonably acceptable locations adjacent to the Purple Line corridor. Site "N-B" is a balcony of the Riviera building, approximately 70-75 feet from the Town of Chevy Chase northern boundary. At both of these locations, measured 24-hour day-night (L_{dn}) noise levels were in the 59 to 61 dBA range. Day-night noise levels in this range are considered consistent with quiet ambient noise conditions in suburban neighborhoods. Day-night noise levels of less than 50 dBA can only occur in areas where there is an absence of human activity. With a population of over 900,000 people, Montgomery County does not qualify as a county lacking human activity. Therefore, the Town's estimate that the noise level within the Town would be less than 50 dBA is not correct.

The noise analysis findings completed at both of these representative sites yielded no impacts from line operations. Projected noise levels under the three LRT options (Low, Medium and High Investment LRT) in the AA/DEIS resulted in L_{dn} levels of 52/53 dBA. Under the FTA impact criteria project noise levels would need to reach an L_{dn} level of 58 dBA to enter the low end of the "Moderate Impact" threshold range. As a result, the project-generated noise levels are estimated to be 5 to 6 dBA below the minimum noise level to result in a noise impact. Moreover, to ensure no impacts occur along the Interim Georgetown Branch Trail and other noise sensitive segments within the Purple Line corridor, train skirts and retaining

walls were mandated and integrated as part of the project design. Together, these abatement measures will ensure a quiet operation with no noise impacts to the Town of Chevy Chase.

2. **The 24 hour L_{dn} values cited for parks are suspiciously loud**. The lowest residential value measured, an L_{dn} of 53 dBA, is remarkably high. We therefore have concerns about the calibration of the microphones employed by the contractor providing the noise analysis.

MTA Response: All noise monitoring equipment used in this analysis, whether owned or rented, is calibrated annually by a certified acoustic laboratory. The calibration certificates for the equipment are attached. Furthermore, prior to starting a noise measurement at each noise monitoring site a manual calibration using a pure tone calibrator (also calibrated annually) is performed to ensure accurate collection of noise monitoring data at each location. An L_{dn} level between 50 to 60 dBA is typical of suburban communities. Moreover, L_{dn} levels in excess of 70 dBA are typical of noise levels in urban areas and in areas adjacent to busy highways.

FTA requirements for parks and other non-sleeping land uses are different than land uses involving sleep such as residences, hospitals, and hotels where nighttime sensitivity to noise is assumed to be of the utmost importance. The FTA impact criteria sets noise level limits based on land use type. Residential properties are categorized as FTA Category 2 - Land Use Activities where a day/night noise level (L_{dn}) matrix must be determined to assess and evaluate if the project noise generates an impact. Parks are not places where people sleep, and therefore there is no sensitivity to noise at night, consequently FTA differentiates these types of uses under a separate category. These uses are described in the table below as Category 1 Land Use Activities where 24-hour day/night noise levels are not used in establishing and evaluating impact. Instead the peak-hour equivalent noise level or L_{eq} (1hr) dBA is the noise matrix used in establishing impact. Therefore all noise measurements and impact assessments completed for parks used peak hour L_{eq} levels.

Moderate and severe impact thresholds for both L_{eq} and L_{dn} land use categories are established using the second table shown below.

FTA Land Use Categories and Metrics for Transit Noise

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor $L_{eq}(h)$*	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land used as outdoor amphitheaters, parks and concert pavilions, as well as National Historic Landmarks with significant outdoor use.
2	Outdoor **L_{dn}**	**Residences and buildings where people normally sleep.** This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(h)$*	Institutional land uses with primary daytime and evening use. This category includes schools, libraries, and churches where it is important to avoid interference with such activities as speech, meditation, and

		concentration on reading material.

Source: FTA, Transit Noise and Vibration Impact Assessment, Final Report, May 2006.

* L_{eq} for the noisiest hour of transit-related activity during hours of noise sensitivity.

FTA Noise Impact Criteria: Noise Levels Defining Impact for Transit Projects

Existing Noise Exposure* $L_{eq}(h)$ or L_{dn} (dBA)	Project Noise Impact Exposure, * $L_{eq}(h)$ or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
<43	<Ambient+10	Ambient+ 10 to 15	<Ambient+15	<Ambient+15	Ambient+ 10 to 15	>Ambient+20
43	<52	52-58	>58	<57	57-63	>63
44	<52	52-58	>58	<57	57-63	>63
45	<52	52-58	>58	<57	57-63	>63
46	<53	53-59	>59	<58	58-64	>64
47	<53	53-59	>59	<58	58-64	>64
48	<53	53-59	>59	<58	58-64	>64
49	<54	54-59	>59	<59	59-64	>64
50	<54	54-59	>59	<59	59-64	>64
51	<54	54-60	>60	<59	59-65	>65
52	<55	55-60	>60	<60	60-65	>65
53	<55	55-60	>60	<60	60-65	>65
54	<55	55-61	>61	<60	60-66	>66
55	<56	56-61	>61	<61	61-66	>66
56	<56	56-62	>62	<61	61-67	>67

FTA Noise Impact Criteria: Noise Levels Defining Impact for Transit Projects

Existing Noise Exposure* $L_{eq}(h)$ or L_{dn} (dBA)	Project Noise Impact Exposure, * $L_{eq}(h)$ or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
57	<57	57-62	>62	<62	62-67	>67
58	<57	57-62	>62	<62	62-67	>67
59	<58	58-63	>63	<63	63-68	>68
60	<58	58-63	>63	<63	63-68	>68
61	<59	59-64	>64	<64	64-69	>69
62	<59	59-64	>64	<64	64-69	>69
63	<60	60-65	>65	<65	65-70	>70
64	<61	61-65	>65	<66	66-70	>70
65	<61	61-66	>66	<66	66-71	>71
66	<62	62-67	>67	<67	67-72	>72
67	<63	63-67	>67	<68	68-72	>72
68	<63	63-68	>68	<68	68-73	>73
69	<64	64-69	>69	<69	69-74	>74
70	<65	65-69	>69	<70	70-74	>74
71	<66	66-70	>70	<71	71-75	>75
72	<66	66-71	>71	<71	71-76	>76
73	<66	66-71	>71	<71	71-76	>76
74	<66	66-72	>72	<71	71-77	>77

FTA Noise Impact Criteria: Noise Levels Defining Impact for Transit Projects

Existing Noise Exposure* $L_{eq}(h)$ or L_{dn} (dBA)	Project Noise Impact Exposure, * $L_{eq}(h)$ or L_{dn} (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
75	<66	66-73	>73	<71	71-78	>78
76	<66	66-74	>74	<71	71-79	>79
77	<66	66-74	>74	<71	71-79	>79
>77	<66	66-75	>75	<71	71-80	>80

Source: Transit Noise and Vibration Impact Assessment, FTA May 2006

Note: L_{dn} is used for land use where nighttime sensitivity is a factor; L_{eq} during the hour of maximum transit noise exposure is used for land use involving only daytime activities

The Town is correct that these noise levels appear to be high because they are in fact peak-hour (loudest hour) L_{eq} (1 hr dBA) noise levels. Day-night (L_{dn}) noise levels are derived from a formula which summarizes and weights daytime (Lday) and nighttime (Lnight) L_{eq} levels. The daytime time period covers 7AM to 10PM and night time covers 10 PM to 7 AM. Before determining the L_{dn} level the nighttime noise levels are further adjusted (weighted) to apply a nighttime 10 decibel adjustment to account for greater sensitivity to noise at night. The details are described in the FTA manual, available on line at http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf .

3. **The *Technical Report* appears to assume single-tracking, where MTA assumes double-tracking**. A head-way of 6 minutes means 10 trains per hour, not 20 trains per hour. The noise reaching the Town would thereby be +3 dBA higher than claimed in the *Technical Report*. Since the noise model has not been available to the Town, we would appreciate your ruling out the possibility of this simple error.

MTA Response: All noise calculations were derived assuming line operations from a two track system. Line operations and noise level estimates were made on a hourly basis. The noise level estimates were derived based on headways and travel speeds that varied throughout the day and from station to station. The Town's claim that the noise reaching the Town of Chevy Chase would be 3 DBA higher than projected by MTA is incorrect.

4. **The *Technical Report* confuses a noise mitigation strategy** (walls next to the train) **with eliminating noise *per se***, ignoring oblique reflections and diffraction from walls, thus understating noise emissions by 4dB(A) and overstating noise suppression by 1 or 2 dB(A).

MTA Response: Most of the noise generated from LRT operations is caused by the friction from the wheels pressing down on the rails as the train moves along. Any potential

reflections of noise generated by the train as it moves along will be reflected downward towards the track bed by the vehicle skirt panels. In addition, even in the absence of the vehicle skirts, a two-car train will result in very little reflection of sound because it passes by a given receptor point for such a short duration. A minimum train length of four cars would be necessary to generate enough wheel/rail sound energy for reflections and then refractions of sound to occur over the top of the retaining walls. In either case, the vehicle skirts provide abatement directly at the noise source (the wheel/rail interface) by preventing sound reflections from occurring by directing the wheel/rail sound energy to the sound absorbing ground track bed below; thus preventing the reflection and refraction phenomenon from occurring.

5. **The *Technical Report* assumes markedly quieter trains than the manufacturers themselves specify**. We could not tell what model and vendor of light rail vehicle was assumed for the source of noise emissions, but noise levels cited by the report are far lower than light-rail manufacturers (Bombardier FLEXITY, Kawasaki LRV Series 100) provide in their specification data.

MTA Response: The FTA standard reference Sound Exposure Level (SEL) of 82 dBA for a commuter rail car was used for the LRT noise level calculations. The noise level from the actual light rail vehicles selected later in the design process are expected to be lower than the type of rail vehicle used in MTA's current noise analysis. Once again, the noise analysis carried out is a conservative estimate in terms of potential noise impacts.

6. **The *Technical Report* does not appear to account for noise from** braking**,** decelerating, accelerating, cross-overs, turning, canyon effects from Bethesda buildings, and focusing effects from entering the tunnel. In aggregate, these emissions will add several decibels unaccounted for in the Technical Report.

MTA Response: **MTA's** noise level estimates were made on an hourly basis, using varying hourly line operation train speeds and headways throughout the Purple Line corridor. Noise analysis assumed the most conservative set of assumptions. Wheel squeal was accounted for in areas where it was a factor. Since the Georgetown Branch right-of-way is a former freight railroad alignment, it does not have any sharp turns that could generate wheel squeal. Trains were assumed to be operating at free flowing speeds provided between any two given proposed train stations. The potential net effect of accounting for decelerating as a train enters a train station would result in lower noise levels than the free-flowing operating speed assumed in our calculations. Similarly the potential noise effect of train acceleration as the train leaves a train station would be lower than the free-flow speed assumed in the noise calculations. There will be no canyon effect because the vehicle skirts will trap the sound and direct the sound energy wards the higher sound absorbing ground bed. Lastly, the sound propagation assumptions employed by the FTA methodology are generally considered conservative and tend to result in the over-prediction of noise exposure.

7. The *Technical Report* assumes that trains run down the center of the ROW rather than on a track, which understates noise reaching the Town by 3 to 4 dBA if the tracks are, aligned South and the Trail North.

MTA Response: The noise analysis calculations used a conservative set of assumptions as described above in Response #6 above. Within the Interim Georgetown Branch Trail section

there is no significant distance between two tracks. The area is fairly tight and the two tracks sit very close to each other. Modeling the resultant noise from each track or a combined centerline would result in no difference in total noise level. The near track contributes more than the far track as a resultant noise level would be the exactly the same as that determined using a single center-line (rail track) source. Noise levels are added logarithmically resulting in much lower noise contribution from the far track versus the near track. The bottom line is that modeling one track or modeling two tracks will generate noise levels which are within several tenths of a decibel of each other. Additionally, the standard FTA procedure acceptable for estimating transit noise calls for determining noise level contribution for two peak conditions referred to as "the day level (Lday)" and "the night level (Lnight)" and then adding these two levels together to establish the L_{dn} level. The method employed by the MTA consultant is far more accurate than the simple standard method. This more vigorous method (described in the FTA appendix, but not necessary for analysis) requires determining the noise levels for each hour operation and from those levels computing the Lday and Lnight noise levels and then the resultant day/night L_{dn} Level. The noise levels and impact assessment estimated using this procedure is more precise than the FTA standard method.

8. The treatment of vibration and low-frequency noise is insufficient.

MTA Response: Low frequency noise is a phenomenon which sometimes occurs in longer trains. The two to three-car trains (most likely two 90 foot cars, or three 60 foot cars) projected for use along the Purple Line corridor are too short for low frequency noise to occur. The pass-by duration time interval past a given location will be too short for this type of vibration to occur. The standard FTA vibration calculation procedure is very conservative.

There were vibration impacts projected along the Interim Georgetown Branch Trail at receptor sites "N-B", "N-8", and "N-10A". These are mentioned and described in the noise report. Impacts occur at these locations because train speeds are assumed high (about 40 mph) and the distance between receptor and train tracks was determined to be 40 feet or less. Within the impacted area estimated vibration levels were just above the FTA 72 VdB impact threshold and would not have resulted in any impact along the entire length of the Interim Georgetown Branch Trail if LRT travel speeds were restricted to a maximum of 30 mph along the trail. Moreover, if the more accurate (and longer) exterior building façade to centerline of the alignment distance had been used the projected vibration impact would have likely disappeared. However, the vibration levels reported in the technical report were purposely conservative, until further refinement and finalization in the proposed alignment and line operation travel speeds are developed and more precise vibration level estimates can be made. Finally, if in the final design, projections of vibration levels above the FTA acceptable limits persist, various vibration mitigation measures will be considered and evaluated for the dampening effectiveness. Recommended vibration mitigation measures would then be integrated as part of the Purple Line project definition similar to those already committed to for mitigating line operation noise.

Attachments

A. 24 Hour Noise Monitoring Data Collected at Site "N-10A" Columbia Country Club, Montgomery County, Maryland

Date	**Time**	L_{eq} **(1 hr) dBA**
10/4/07	12-1 AM	54.1
10/4/07	1-2	53.5
10/4/07	2-3	54.3
10/4/07	3-4	55.1
10/4/07	4-5	54.4
10/4/07	5-6	54.4
10/4/07	6-7	54.1
10/4/07	7-8	58.6
10/4/07	8-9	57.5
10/4/07	9-10	56.5
10/4/07	10-11	57.6
10/4/07	11-12	55.4
10/4/07	12-1 PM	57.1
10/4/07	1-2	54.5
10/4/07	2-3	55.5
10/4/07	3-4	59.8
10/4/07	4-5	56.6
10/3/07	5-6	50.4
10/3/07	6-7	50.8
10/3/07	7-8	53.5
10/3/07	8-9	54.4
10/3/07	9-10	54.3
10/3/07	10-11	55.6
10/3/07	11 PM -12 midnight	54.1
Peak L_{eq} (1-hr)		59.8
L Day*		56.2
L Night*		54.4
Day/Night L_{dn} Level*		61.1

***** "L Day", "L Night" and "Day/Night L_{dn}" values are derived noise level descriptors.

B. 24 Hour Noise Monitoring Data Collected at Site "N-B"
4242 East West Highway, Bethesda, Maryland

Date	**Time**	L_{eq} **(1 hr) dBA**
10/16/07	12-1 AM	48.9
10/16/07	1-2	45.9
10/16/07	2-3	45.9
10/16/07	3-4	44.9
10/16/07	4-5	48
10/16/07	5-6	51.8
10/16/07	6-7	55.3
10/16/07	7-8	57.5
10/16/07	8-9	59.2
10/16/07	9-10	57
10/16/07	10-11	57.5
10/16/07	11-12	57.4
10/16/07	12-1 PM	57.3
10/15/07	1-2	57
10/15/07	2-3	62.2
10/15/07	3-4	57.9
10/15/07	4-5	58
10/15/07	5-6	59.1
10/15/07	6-7	59.3
10/15/07	7-8	57.2
10/15/07	8-9	55.6
10/15/07	9-10	54.9
10/15/07	10-11	53.1
10/15/07	11 PM -12 midnight	51.2
Peak L_{eq} (1-hr)		62.9
L Day*		58.2
L Night*		50.8
Day/Night L_{dn} Level*		59.3

* "L Day", "L Night" and "Day/Night L_{dn}" values are derived noise level descriptors.

C. Equipment Calibration Certificates

Please note that the certificate dates shown are the start of the valid time period. So a certificate dated April 24, 2007 is valid through April 24, 2008. All short-term and long-term noise measurements along the Crescent Trail segment were collected in October 2007.

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MICROPHONE

Manufactured by:	BRUEL & KJAER
Model No:	4155
Serial No:	1394626
Calibration Recall No:	15687

Submitted By:

Customer:	ARTHUR MORRONE
Company:	PARSONS BRINCKERHOFF
Address:	ONE PENN PLAZA
	NEW YORK NY 10119

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4155 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2000 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

Calibration Date: 14-Nov-06

Certificate No: 15687 - 2

Felix Christopher
Quality Manager

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

ISO 9001:2000 Registered Company
Calibration Traceable To N. I. S. T.

Phone: (585) 586-3900 Fax.: (585) 586-4327

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

ACOUSTICAL CALIBRATOR

Manufactured by:	BRUEL & KJAER
Model No:	4231
Serial No:	2412378
Calibration Recall No:	15687

Submitted By:

Customer:	ARTHUR MORRONE
Company:	PARSONS BRINCKERHOFF
Address:	ONE PENN PLAZA
	NEW YORK NY 10119

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4231 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2000 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

Calibration Date: 14-Nov-06

Certificate No: 15687 - 3

Felix Christopher
Quality Manager

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

ISO 9001:2000 Registered Company
Calibration Traceable To N. I. S. T.

ACCREDITATION ISO/IEC 17025
ACCREDITED
1533.01

Phone: (585) 586-3900 Fax.: (585) 586-4327

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MODULAR PRECISION SOUND LEVEL METER

Manufactured by:	BRUEL & KJAER
Model No:	2231
Serial No:	1178130
Calibration Recall No:	15687

Submitted By:

Customer:	ARTHUR MORRONE
Company:	PARSONS BRINCKERHOFF
Address:	ONE PENN PLAZA
	NEW YORK NY 10119

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 2231 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2000 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Calibration Date: 14-Nov-06

Certificate No: 15687 - 1

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

Approved by:

Felix Christopher
Quality Manager

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

ISO 9001:2000 Registered Company
Calibration Traceable To N. I. S. T.
ACCREDITED

Phone: (585) 586-3900 Fax.: (585) 586-4327

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

ACOUSTICAL CALIBRATOR

Manufactured by:	BRUEL & KJAER
Model No:	4231
Serial No:	2170008
Calibration Recall No:	16204

Submitted By:

Customer:	ARTHUR MORRONE
Company:	PARSONS BRINCKERHOFF
Address:	ONE PENN PLAZA
	NEW YORK NY 10119

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4231 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2000 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

Calibration Date: 24-Apr-07

Certificate No: 16204 - 5

Felix Christopher
Quality Manager

QA Doc. #1051 Rev. 2.0 10/1/01

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

ISO 9001:2000 Registered Company
Calibration Traceable To N. I. S. T.

Phone: (585) 586-3900 Fax.: (585) 586-4327

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MICROPHONE

Manufactured by:	BRUEL & KJAER
Model No:	4189
Serial No:	2021255
Calibration Recall No:	16204

Submitted By:

Customer:	ARTHUR MORRONE
Company:	PARSONS BRINCKERHOFF
Address:	ONE PENN PLAZA
	NEW YORK NY 10119

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4189 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2000 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

Calibration Date: 24-Apr-07

Certificate No: 16204 - 4

Felix Christopher
Quality Manager

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

ISO 9001:2000 Registered Company
Calibration Traceable To N. I. S. T.
ACCREDITATION ISO/IEC 17025 ACCREDITED 1533.01

Phone: (585) 586-3900 Fax.: (585) 586-4327

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

INTEGRATING SOUND LEVEL METER

Manufactured by:	BRUEL & KJAER
Model No:	2238
Serial No:	2394977
Calibration Recall No:	16204

Submitted By:

Customer:	ARTHUR MORRONE
Company:	PARSONS BRINCKERHOFF
Address:	ONE PENN PLAZA
	NEW YORK NY 10119

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 2238 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2000 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by:

FC

Calibration Date: 25-Apr-07

Certificate No: 16204 - 2

Felix Christopher
Quality Manager

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.
ISO 9001:2000 Registered Company
Calibration Traceable To N. I. S. T.
ACCREDITED
Phone: (585) 586-3900 Fax.: (585) 586-4327

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MICROPHONE

Manufactured by:	BRUEL & KJAER
Model No:	4188
Serial No:	2407350
Calibration Recall No:	16204

Submitted By:

Customer:	ARTHUR MORRONE
Company:	PARSONS BRINCKERHOFF
Address:	ONE PENN PLAZA
	NEW YORK NY 10119

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4188 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2000 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Calibration Date: 24-Apr-07

Certificate No: 16204 - 3

Approved by:

FC

Felix Christopher
Quality Manager

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

ISO 9001:2000
Registered Company

Calibration Traceable
To N. I. S. T.

ACCREDITED

Phone: (585) 586-3900 Fax.: (585) 586-4327

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MODULAR PRECISION SOUND ANALYZER

Manufactured by:	BRUEL & KJAER
Model No:	2260
Serial No:	2001710
Calibration Recall No:	16204

Submitted By:

Customer:	ARTHUR MORRONE
Company:	PARSONS BRINCKERHOFF
Address:	ONE PENN PLAZA
	NEW YORK NY 10119

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 2260 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2000 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Calibration Date: 25-Apr-07

Certificate No: 16204 - 1

Approved by:

Felix Christopher
Quality Manager

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.
ISO 9001:2000 Registered Company
Calibration Traceable To N. I. S. T.
ACCREDITATION ISO/IEC 17025 ACCREDITED
Phone: (585) 586-3900 Fax.: (585) 586-4327

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1533.01

February 23, 2010

Parsons Brinckerhoff
Attn: Arthur Morrone
One Penn Plaza, 3rd Floor
New York, NY 10119

REF: WCCL CALIBRATION

Dear Mr. Marrone,

As per request we hereby notify the following.
The Sound level Meter kits your company has rented in the past were within calibration.

We have checked the following before the Sound level Meter kits were sent to you.

a. Each instrument was within calibration. (If necessary they were calibrated before shipment.)
b. The Sound level Meter kit functional tested as a system and verified for accuracy at 1kHz and at 94dB sound pressure level.
c. Verified if all document necessary for use of Sound level Meter was included in the kit.

West Caldwell Calibration Laboratories, Inc. is

a. ISO 9001-2008 Registered Company
b. ISO 17025 Accredited Company (A2LA)

The Sound level Meter model 2231 (Bruel & Kjaer) your company has rented meets the following standards.

a. IEC 651 Type 1
b. IEC 804 Type 1
c. ANSI S 1.4-1983 Type 1

If you need any other information please contact us.

Yours Truly

Felix Christopher,
Technical Manager

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Brüel & Kjær
North America Inc.

February 24, 2010

Parsons, Brinkerhoff, Quade, & Douglas, Inc.
One Penn Plaza
New York, NY 10119

Attn: Mr. Arthur Morrone

Dear Mr. Morrone,

I have researched our records, and the equipment you rented in October 2007 was under current NIST-traceable calibration at the time of the rental.

Here are the calibration dates for each item:

2238-E s/n 2522505 2/27/07

2238-E s/n 2522506 2/27/07

2238-E s/n 2498697 2/28/07

4231 s/n 2560024 1/4/07

4231 s/n 2564440 1/4/07

Please let me know if you need anything further.

Kind Regards,

Russ Turco

Support Engineer, Rental Manager
Bruel & Kjaer North America, Inc.
2815-A Colonnades Court
Norcross, GA 30071

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