Environmental Noise Assessment

Teichert Martis Valley Aggregate Facility
Quarterly Compliance Noise Monitoring – Spring 2021

Truckee, California

BAC Job # 2020-001

Prepared For:

Town of Truckee

Attn: Chantal Birnberg
Town of Truckee
Planning Department

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Senior Consultant

June 10, 2021

BOLLARD
Acoustical Consultants

Executive Summary

The use-permit for the Teichert Inc. Martis Valley aggregate plant requires that quarterly noise measurements be conducted to determine the compliance of Teichert operations with the noise standards of the Town of Truckee Development Code. Bollard Acoustical Consultants, Inc. (BAC) was retained by the Town of Truckee to prepare these analyses for the 2021 calendar year.

The results of the continuous noise level measurements and BAC observations conducted for the Spring 2021 quarter on May 13, 2021, indicate that noise levels attributable to Teichert Martis Valley sand and gravel operations did not exceed the applicable Town of Truckee daytime or nighttime noise level criteria at the noise measurement locations.

Criteria for Acceptable Noise Exposure

Town of Truckee Development Code

The Town of Truckee Development Code noise element contains criteria for acceptable exterior noise exposures in terms of day (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) periods in terms of various statistical descriptors. The Truckee noise standards are graduated, meaning that higher noise levels are allowed if the noise source is only generated for a short period of time, and the greater the percentage of time the noise is generated, the lower the noise level standard. For example, if the noise source is present for more than 50% of an hour, the noise level standard used for assessing compliance is the L_{50}. During daytime hours, the L_{50} noise level standard applicable to residential uses is 55 dB. Conversely, the noise level which is not to be exceeded for any duration of the hour (denoted L_{max} for maximum), is 75 dB during daytime hours. Due to the nature of the activities at the Teichert Martis Valley site, this analysis focuses on compliance with both the L_{50} and L_{max} noise level standards for both daytime and nighttime periods. Those standards are shown in Table 1.

Table 1
Truckee Municipal Code Noise Standards for Residential Uses

Noise Level Descriptor	Number of Minutes Per Hour	Daytime Standard	Nighttime Standard
L_{max}	0	75	70
L_{50}	30	55	50
Source: Truckee Municipal Code, Title 18, Development Code (Table 3-7)			

Evaluation of Current Noise Environment

Methodology

BAC conducted noise level measurements on May 13, 2021, at the three locations shown in Appendix A. The measurements were performed to evaluate the ambient noise environment at the outdoor activity areas of the residences located nearest to the Teichert Martis Valley facility. Specifically, measurements conducted at site 1 (near the residence at 14492 Royal Way) were intended to be representative of the ambient noise environment of the residences located off Royal Way and Cavalier Rise. Measurement site 2 was selected to be representative of the ambient noise environment at residences located near the terminus of Foxboro Drive (i.e., closest residences to the Teichert plant equipment). Finally, measurements conducted at site 3 were intended to be representative of the ambient noise environment at residences located near the intersection of Coldwater Road and Foxboro Drive. BAC staff conducted observations of Teichert operations during the noise survey to identify noise sources which contributed to the measured noise levels.

Larson Davis Laboratories (LDL) Model LxT and 831 precision integrating sound level meters were used for the continuous noise measurements. The meters were calibrated immediately before and after use with an LDL CAL-200 acoustical calibrator and meet all pertinent specifications of the American National Standards Institute (ANSI S1.4) for precision sound level measurement systems. The microphones were oriented vertically at a height of 5 feet above ground.

Weather conditions during the measurement period on May 13, 2021, consisted of moderately cold morning and afternoon temperatures, clear skies, light winds, and moderate humidity.

Noise Level Measurement Results

The sound level meters were programmed to report maximum (L_{max}) and median (L_{50}) levels for every ½ hour interval. The results of the continuous noise level measurements are provided in Appendix B in terms of these descriptors. Photographs of the measurement sites are provided in Appendix C.

According to Town of Truckee planning staff, the Teichert facility asphalt plant and rock crushing equipment was in normal operations from 7:00 a.m. to 1:00 p.m. on the day of the monitoring effort (May 13, 2021). As mentioned in the Spring compliance report, the facility relocated the jaw crusher equipment during the 2019-2020 winter season. The previous and new (current) locations of the jaw crusher are identified in Appendix A. Photographs of the current jaw crusher equipment location are provided in Appendix C.

Maximum Noise Levels (L_{max}):

Because the nearest residences are located a considerable distance from Teichert operations, recorded maximum noise levels in the vicinity of those locations were generally not attributable to the Teichert equipment. Specifically, BAC field staff observations indicated that many of the

recorded maximum levels were caused by other sources such as traffic, aircraft overflights, and train horns.

As indicated in Appendix B, measured maximum noise levels at site 1 ranged from a low of 59 dB L_{max} during the 11:30 a.m. to 12:00 p.m. period to a high of 82 dB L_{max} during the 1:00 p.m. to 1:30 p.m. period. However, it was determined that the high noise level at site 1 was attributed to the residence using lawn equipment during that timeframe. The measured maximum noise levels at site 2, ranged from a low of 55 dB L_{max} during the 10:30 a.m. to 11:00 a.m. period to a high of 74 dB L_{max} during the 10:00 a.m. to 10:30 a.m. period. Finally, measured maximum noise levels at site 3 ranged from a low of 53 dB L_{max} during the 7:30 a.m. to 8:00 a.m. period to a high of 71 dB L_{max} during the 10:00 a.m. to 10:30 a.m. period.

Based on an analysis of the measurement data, measured maximum noise levels due to Teichert operations did not exceed the Town of Truckee Development Code 70 dB L_{max} prior to 7:00 a.m. or 75 dB L_{max} after 7:00 a.m. at any of the monitoring locations.

Median Noise Levels (L_{50}):

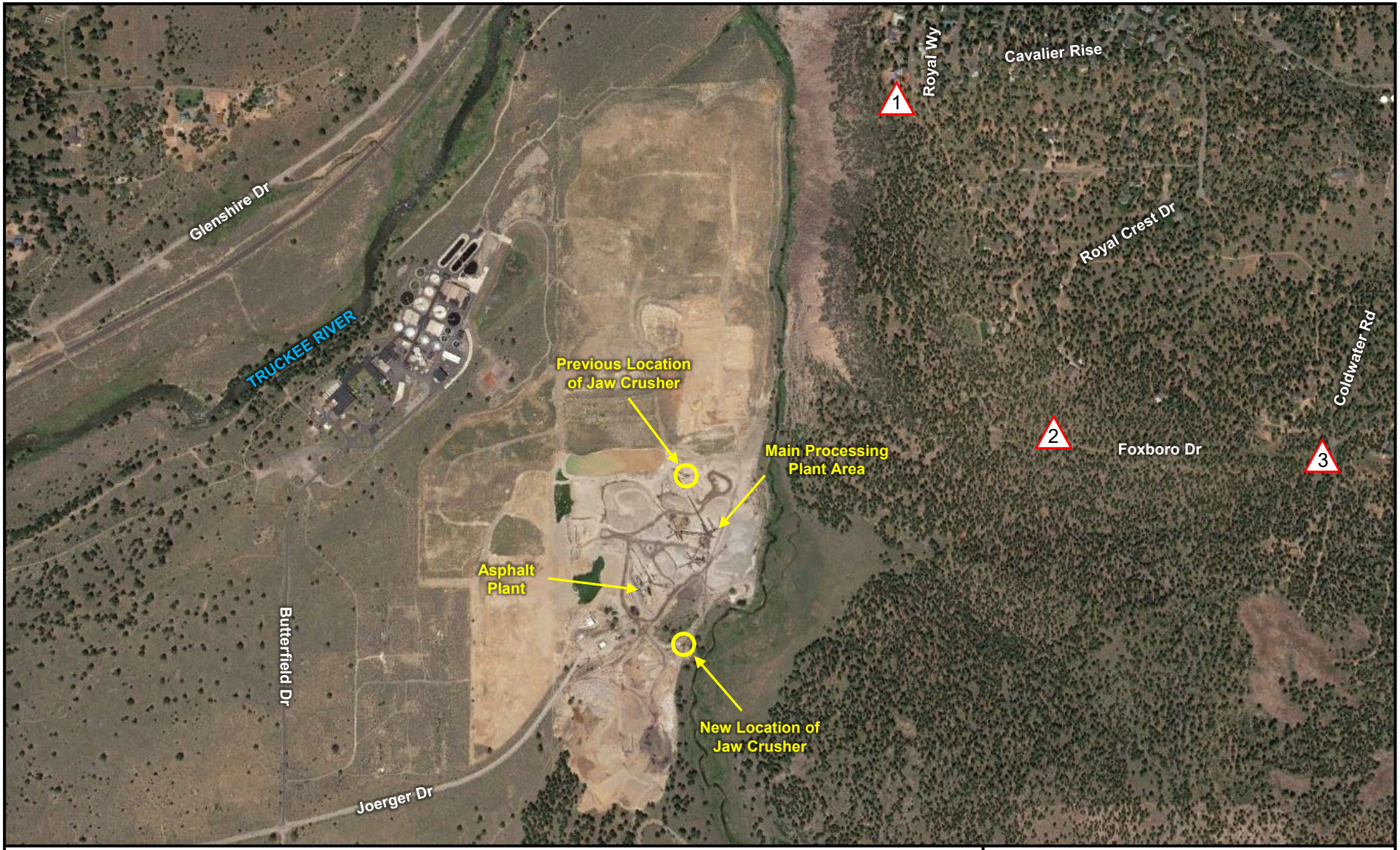
Because the Teichert operations typically occur continuously throughout any given hour, the noise level descriptor most suitable for addressing compliance with the Town of Truckee standards is the L_{50}, or median noise level.

The data contained in Appendix B indicate that measured median noise levels at site 1 ranged from a low of 37 dB L_{50} during the 11:30 a.m. to 12:00 p.m. period to high of 69 dB L_{50} during the 1:00 p.m. to 1:30 p.m. period. As mentioned above, the high noise level at site 1 was attributed to nearby lawn equipment operation during that timeframe. The measured median noise levels at site 2 ranged from a low of 37 dB L_{50} during the 11:30 a.m. to 12:00 p.m. period to high of 51 dB L_{50} during the 7:30 a.m. to 8:00 a.m. period. Finally, the measured median noise levels at site 3 ranged from a low of 29 dB L_{50} during the 11:30 a.m. to 12:00 p.m. period to high of 46 dB L_{50} during the 7:00 a.m. to 7:30 a.m. period.

Based on analysis of the measurement data, measured median noise levels due to Teichert operations did not exceed the Town of Truckee Development Code standards of 50 dB L_{50} prior to 7:00 a.m. or 55 dB L_{50} after 7:00 a.m. at any of the monitoring locations.

Conclusions

Based on the results of the noise level survey conducted May 13, 2021, noise levels generated from operations at the Teichert Martis Valley aggregate facility were found to satisfy the applicable Town of Truckee daytime and nighttime noise level criteria. Specifically, noise levels generated from facility asphalt plant and rock crushing equipment operations were found to comply with the applicable Town of Truckee daytime and nighttime noise level standards at all measurement sites.



Legend

Continuous Noise Measurement Sites

N

Scale (Feet)

0 600 1,200

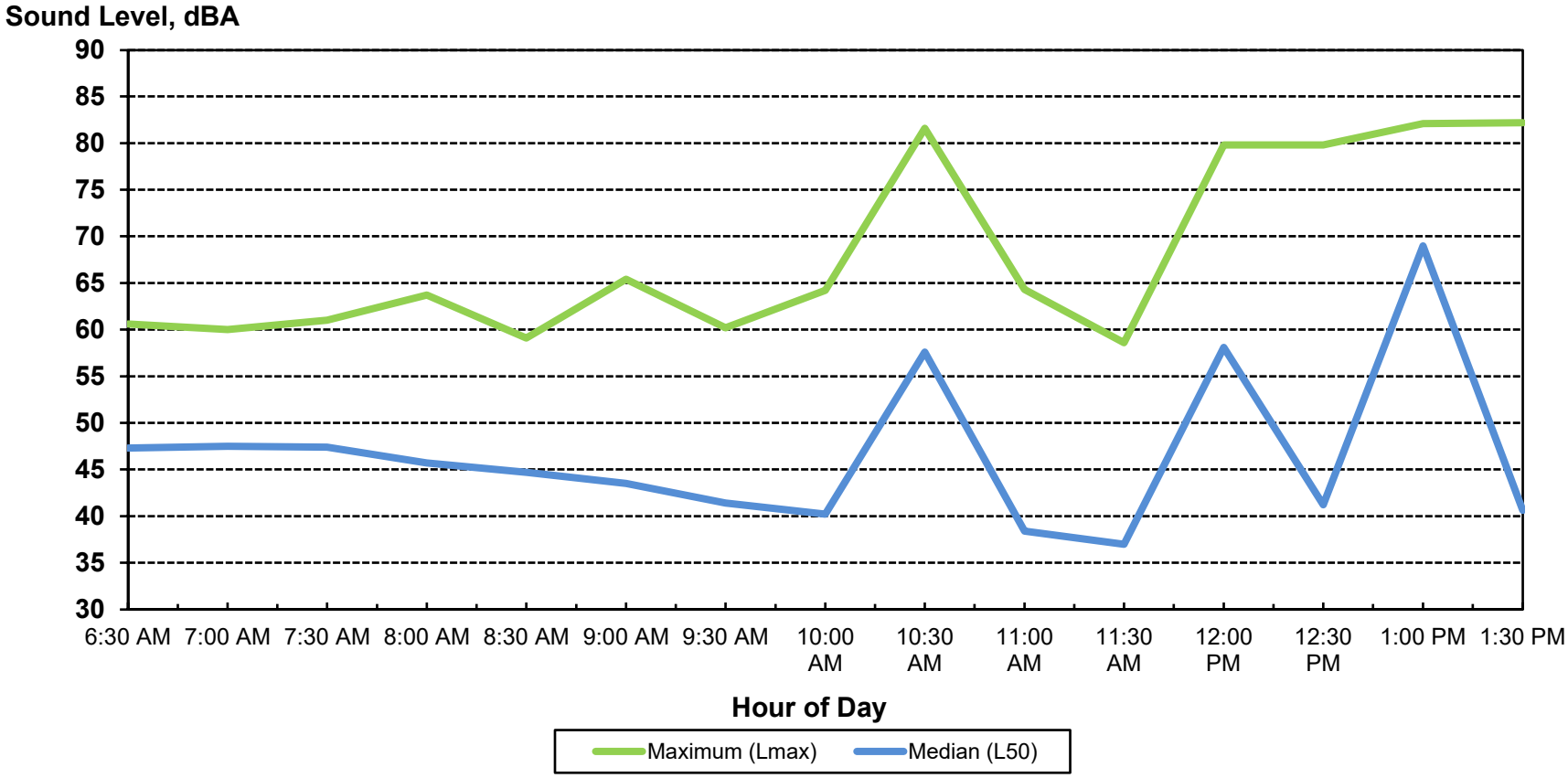
Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Spring 2021
Truckee, California

Noise Measurement Site Locations

Appendix A

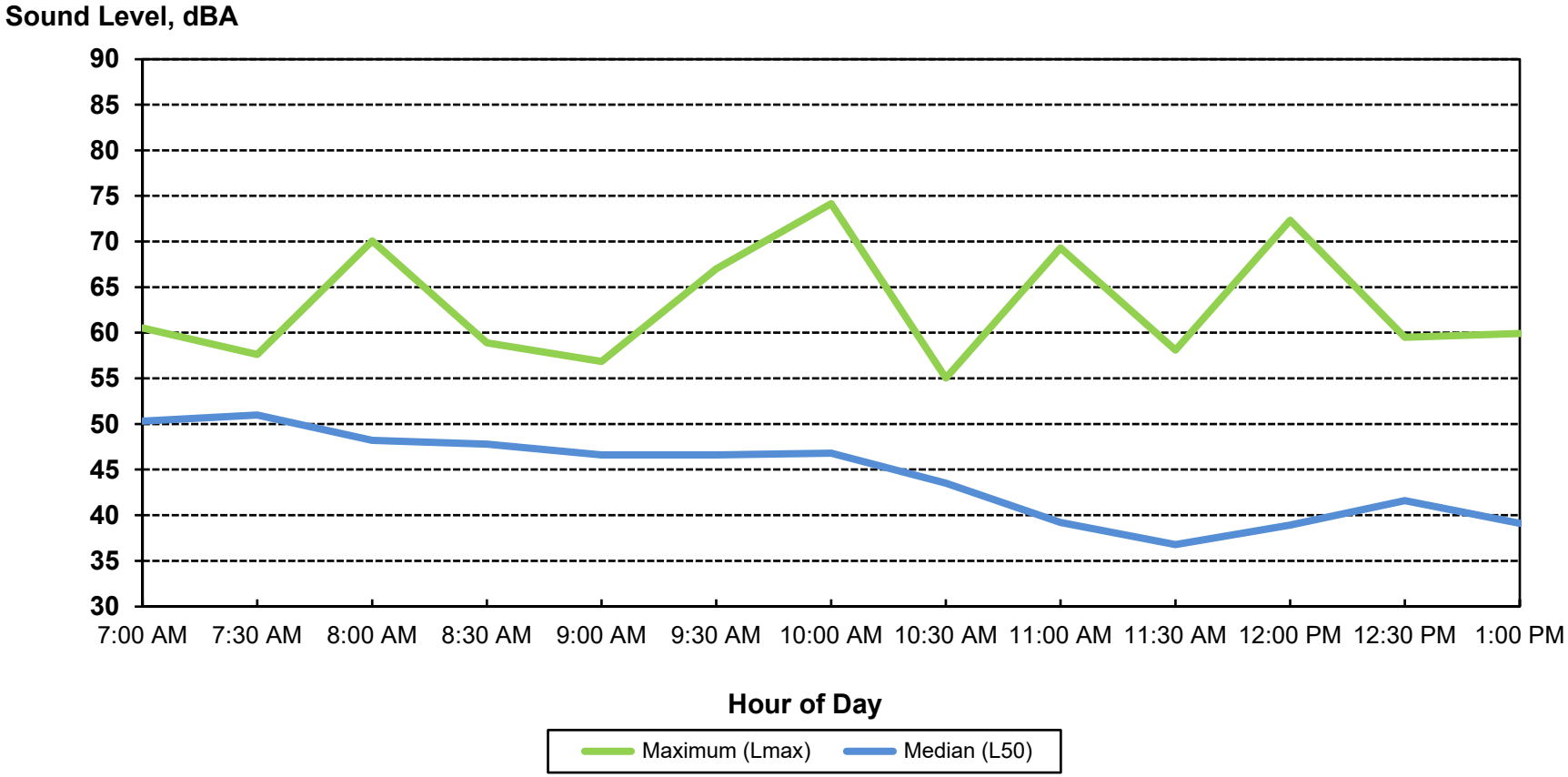
BOLLARD Acoustical Consultants

Appendix B-1
Noise Monitoring Results - Site 1
Teichert Martis Valley Quarterly Compliance - Spring 2021
Thursday, May 13, 2021



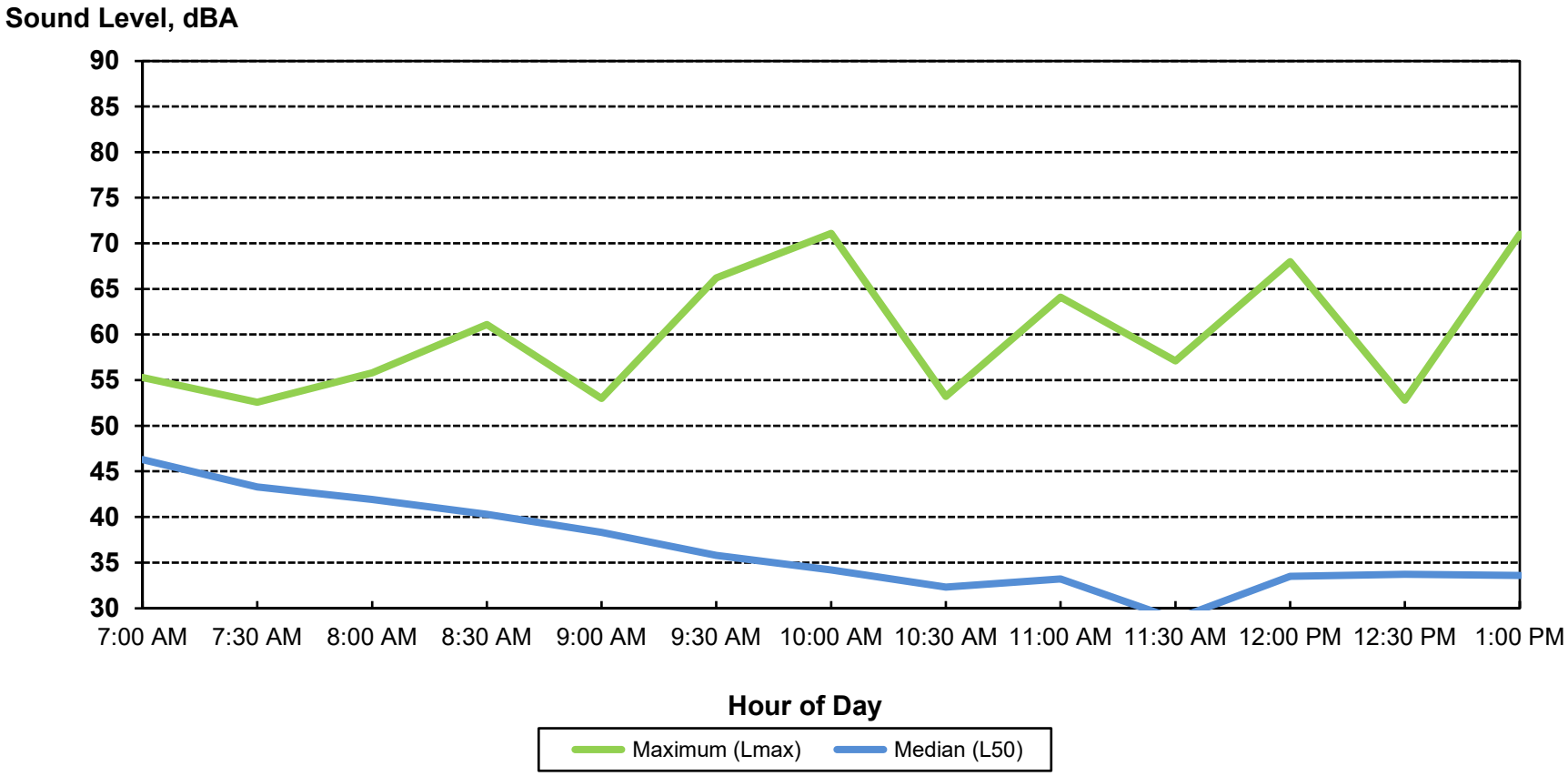
BOLLARD
Acoustical Consultants

Appendix B-2
Noise Monitoring Results - Site 2
Teichert Martis Valley Quarterly Compliance - Spring 2021
Thursday, May 13, 2021



BOLLARD
Acoustical Consultants

Appendix B-3
Noise Monitoring Results - Site 3
Teichert Martis Valley Quarterly Compliance - Spring 2021
Thursday, May 13, 2021



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Acoustical Consultants

Legend

A: Site 1: Noise Monitoring Location Near Royal Way and Cavalier Rise
B: Site 2: Noise Monitoring Location Near the Terminus of Foxboro Drive
C: Site 3: Noise Monitoring Location Near the Intersection of Coldwater Road and Foxboro Drive
D: New Jaw Crusher Location

Teichert Martis Valley Quarterly Compliance – Spring 2021

Truckee, CA

Photographs of Survey Locations

Appendix C

BOLLARD Acoustical Consultants

Environmental Noise Assessment

Teichert Martis Valley Aggregate Facility
Quarterly Compliance Noise Monitoring – Fall 2021

Truckee, California

BAC Job # 2021-001

Prepared For:

Town of Truckee

Attn: Chantal Birnberg
Town of Truckee
Planning Department

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Senior Consultant

October 28, 2021

BOLLARD
Acoustical Consultants

Executive Summary

The use-permit for the Teichert Inc. Martis Valley aggregate plant requires that quarterly noise measurements be conducted to determine the compliance of Teichert operations with the noise standards of the Town of Truckee Development Code. Bollard Acoustical Consultants, Inc. (BAC) was retained by the Town of Truckee to prepare these analyses for the 2021 calendar year.

The results of the continuous noise level measurements and BAC observations conducted for the Fall 2021 quarter on October 13, 2021, indicate that noise levels attributable to Teichert Martis Valley sand and gravel operations did not exceed the applicable Town of Truckee daytime or nighttime noise level criteria at the noise measurement locations.

Criteria for Acceptable Noise Exposure

Town of Truckee Development Code

The Town of Truckee Development Code noise element contains criteria for acceptable exterior noise exposures in terms of day (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) periods in terms of various statistical descriptors. The Truckee noise standards are graduated, meaning that higher noise levels are allowed if the noise source is only generated for a short period of time, and the greater the percentage of time the noise is generated, the lower the noise level standard. For example, if the noise source is present for more than 50% of an hour, the noise level standard used for assessing compliance is the L_{50}. During daytime hours, the L_{50} noise level standard applicable to residential uses is 55 dB. Conversely, the noise level which is not to be exceeded for any duration of the hour (denoted L_{max} for maximum), is 75 dB during daytime hours. Due to the nature of the activities at the Teichert Martis Valley site, this analysis focuses on compliance with both the L_{50} and L_{max} noise level standards for both daytime and nighttime periods. Those standards are shown in Table 1.

Table 1
Truckee Municipal Code Noise Standards for Residential Uses

Noise Level Descriptor	Number of Minutes Per Hour	Daytime Standard	Nighttime Standard
L_{max}	0	75	70
L_{50}	30	55	50
Source: Truckee Municipal Code, Title 18, Development Code (Table 3-7)			

Evaluation of Current Noise Environment

Methodology

BAC conducted noise level measurements on October 13, 2021, at the two locations shown in Appendix A. The measurements were performed to evaluate the ambient noise environment at the outdoor activity areas of the residences located nearest to the Teichert Martis Valley facility. Specifically, measurements conducted at site 1 (near the residence at 14492 Royal Way) were intended to be representative of the ambient noise environment of the residences located off Royal Way and Cavalier Rise. Measurement site 2 was selected to be representative of the ambient noise environment at residences located near the terminus of Foxboro Drive (i.e., closest residences to the Teichert plant equipment). BAC staff conducted observations of Teichert operations during the noise survey to identify noise sources which contributed to the measured noise levels.

Larson Davis Laboratories (LDL) Model LxT and 831 precision integrating sound level meters were used for the continuous noise measurements. The meters were calibrated immediately before and after use with an LDL CAL-200 acoustical calibrator and meet all pertinent specifications of the American National Standards Institute (ANSI S1.4) for precision sound level measurement systems. The microphones were oriented vertically at a height of 5 feet above ground.

Weather conditions during the measurement period on October 13, 2021, consisted of moderately cold morning and afternoon temperatures, cloudy skies, light winds, and moderate humidity.

Noise Level Measurement Results

The sound level meters were programmed to report maximum (L_{max}) and median (L_{50}) levels for every ½ hour interval. The results of the continuous noise level measurements are provided in Appendix B in terms of these descriptors. Photographs of the measurement sites are provided in Appendix C.

According to Town of Truckee planning staff (via Teichert representative), the Teichert facility asphalt operations (Hot Plant) were 5:00 a.m. to 8:00 p.m. on the day of the monitoring effort (October 13, 2021). Teichert staff further indicated that rock crushing equipment (Rock Plant) was in operation from 7:00 a.m. to 5:00 p.m. that same day. As mentioned in the summer compliance report, the facility relocated the jaw crusher equipment during the 2019-2020 winter season.

Maximum Noise Levels (L_{max}):

Because the nearest residences are located a considerable distance from Teichert operations, recorded maximum noise levels in the vicinity of those locations were generally not attributable to the Teichert equipment. Specifically, BAC field staff observations indicated that many of the recorded maximum levels were caused by other sources such as traffic, aircraft overflights, and train horns.

As indicated in Appendix B, measured maximum noise levels at site 1 ranged from a low of 54 dB L_{max} during the 10:00 a.m. to 10:30 a.m. period to a high of 74 dB L_{max} during the 11:30 a.m. to 12:00 p.m. period. The measured maximum noise levels at site 2, ranged from a low of 52 dB L_{max} during the 10:00 a.m. to 10:30 a.m. period to a high of 76 dB L_{max} during the 11:30 a.m. to 12:00 p.m. period. However, it was determined that the high noise level from site 2 was attributed to an aircraft flying overhead during that timeframe.

Based on an analysis of the measurement data, measured maximum noise levels due to Teichert operations did not exceed the Town of Truckee Development Code 70 dB L_{max} prior to 7:00 a.m. or 75 dB L_{max} after 7:00 a.m. at any of the monitoring locations.

Median Noise Levels (L_{50}):

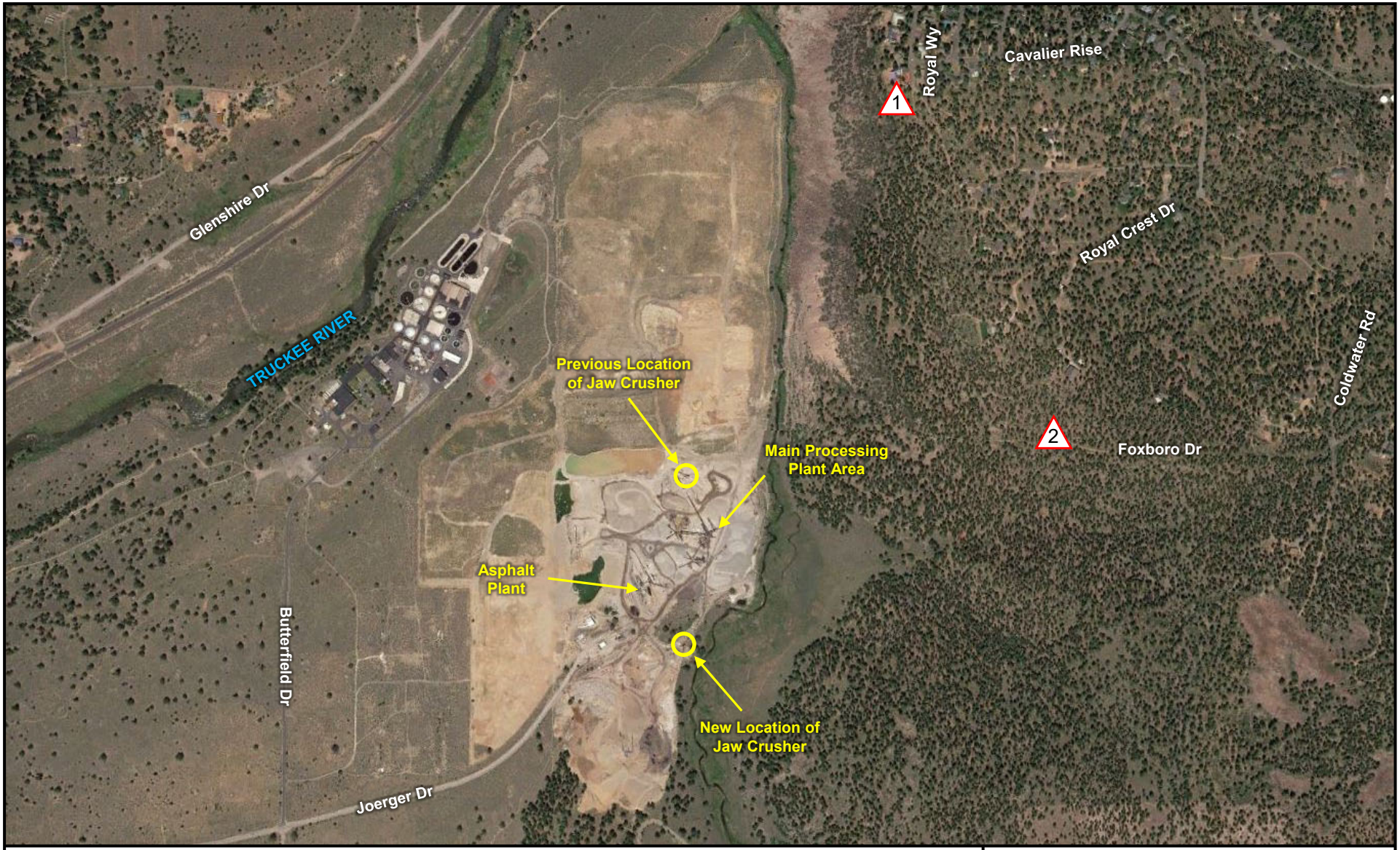
Because the Teichert operations typically occur continuously throughout any given hour, the noise level descriptor most suitable for addressing compliance with the Town of Truckee standards is the L_{50}, or median noise level.

The data contained in Appendix B indicate that measured median noise levels at site 1 ranged from a low of 42 dB L_{50} during the 1:00 p.m. to 1:30 p.m. period to high of 47 dB L_{50} during the 8:30 a.m. to 9:30 a.m., 10:30 a.m. to 11:00 a.m., and 12:00 p.m. to 12:30 p.m. periods. The measured median noise levels at site 2 ranged from a low of 45 dB L_{50} during the 7:00 a.m. to 7:30 a.m. period to high of 50 dB L_{50} during the 9:30 a.m. to 10:30 a.m. period.

Based on analysis of the measurement data, measured median noise levels due to Teichert operations did not exceed the Town of Truckee Development Code standards of 50 dB L_{50} prior to 7:00 a.m. or 55 dB L_{50} after 7:00 a.m. at any of the monitoring locations.

Conclusions

Based on the results of the noise level survey conducted October 13, 2021, noise levels generated from operations at the Teichert Martis Valley aggregate facility were found to satisfy the applicable Town of Truckee daytime and nighttime noise level criteria. Specifically, noise levels generated from facility asphalt plant and rock crushing equipment operations were found to comply with the applicable Town of Truckee daytime and nighttime noise level standards at all measurement sites.



Legend

Continuous Noise Measurement Sites

N

Scale (Feet)

0 600 1,200

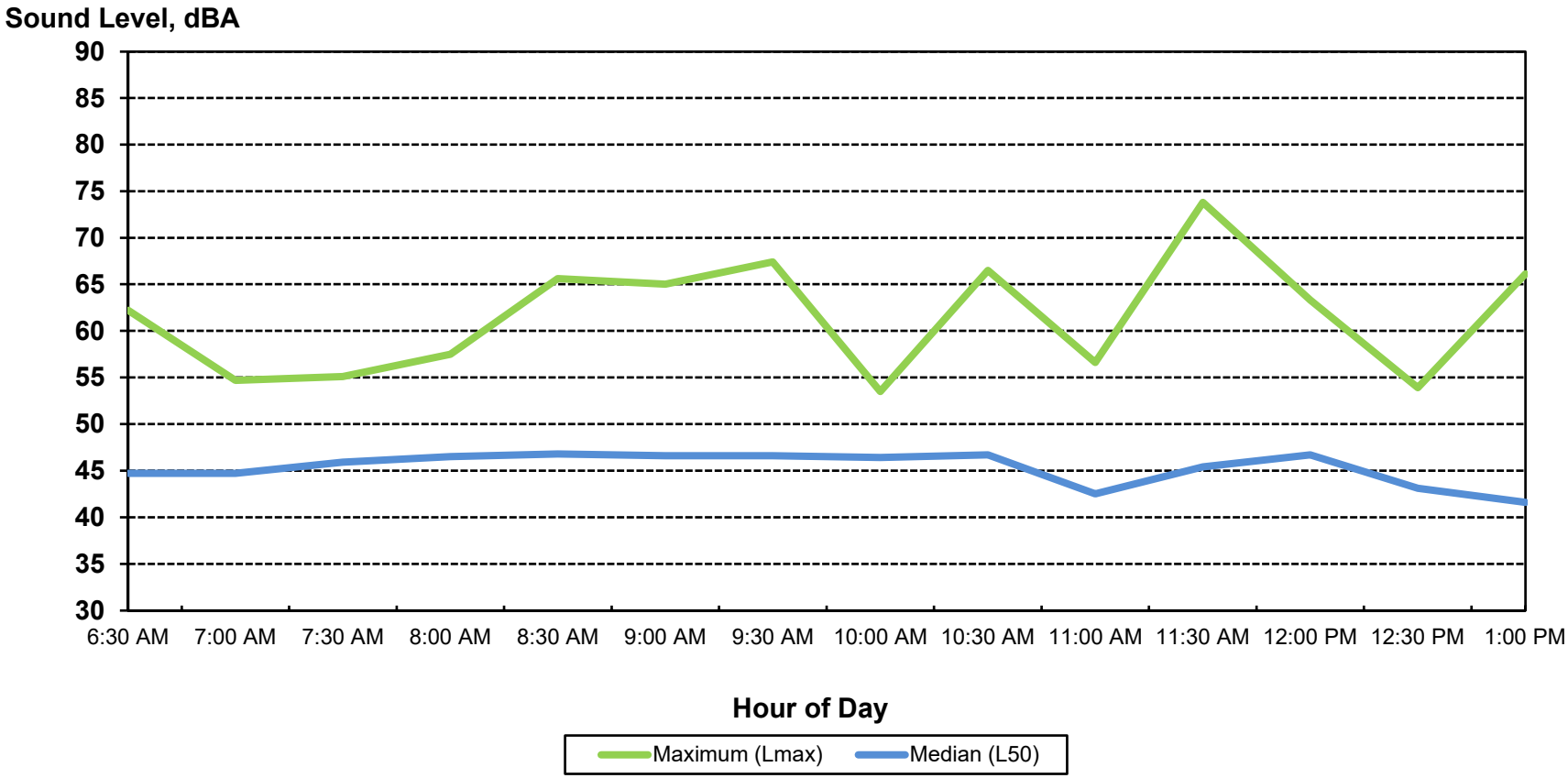
Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Fall 2021
Truckee, California

Noise Measurement Site Locations

Appendix A

BOLLARD Acoustical Consultants

Appendix B-1
Noise Monitoring Results - Site 1
Teichert Martis Valley Quarterly Compliance - Fall 2021
Wednesday, October 13, 2021



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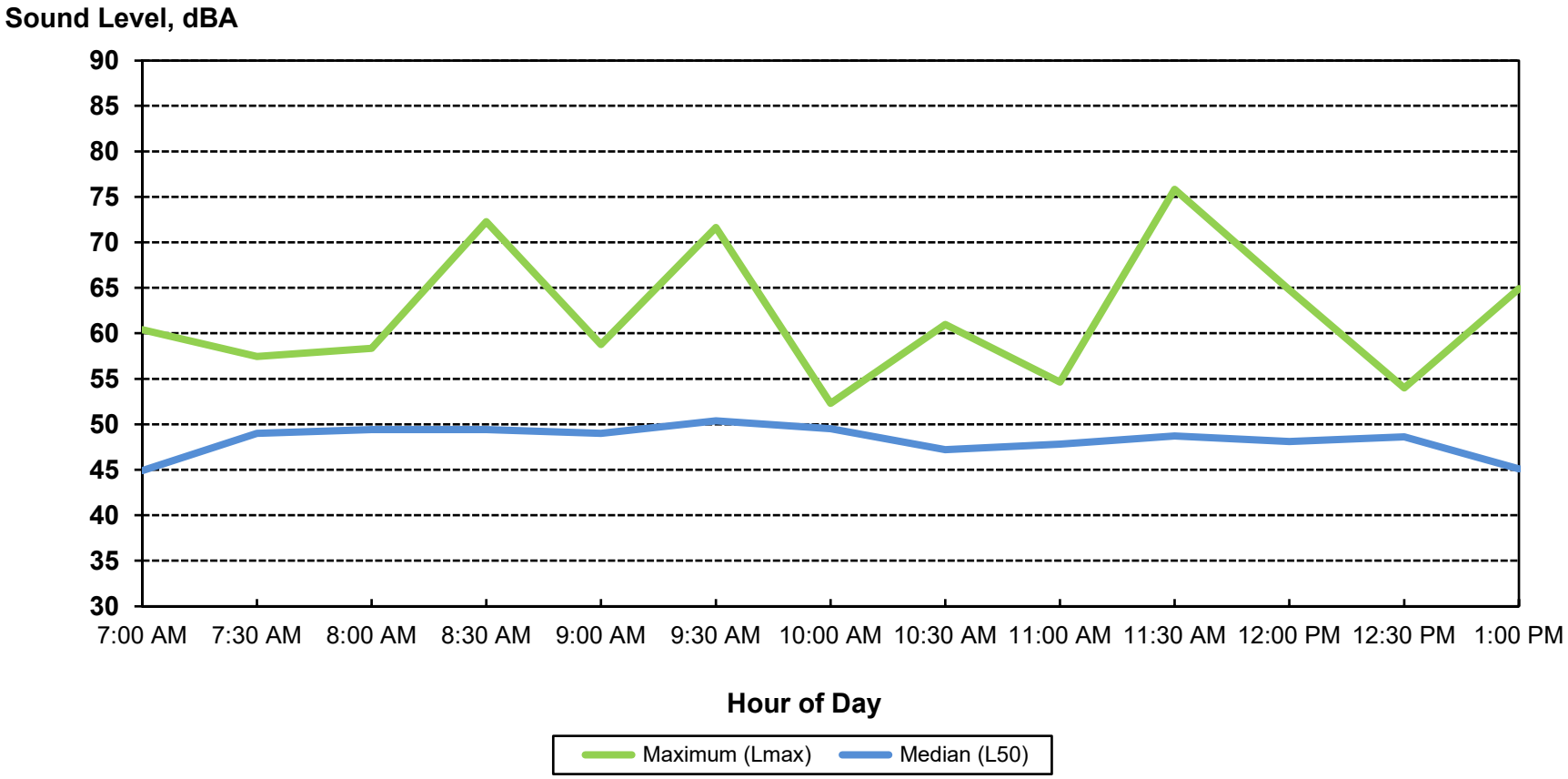
Acoustical Consultants

Appendix B-2
Noise Monitoring Results - Site 2
Teichert Martis Valley Quarterly Compliance - Fall 2021
Wednesday, October 13, 2021



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Legend

A: Site 1: Noise Monitoring Location Near Royal Way and Cavalier Rise
B: Site 2: Noise Monitoring Location Near the Terminus of Foxboro Drive

Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Fall 2021
Truckee, CA

Photographs of Survey Locations

Appendix C

BOLLARD
Acoustical Consultants

Environmental Noise Assessment

Teichert Martis Valley Aggregate Facility
Quarterly Compliance Noise Monitoring – Summer 2021

Truckee, California

BAC Job # 2021-001

Prepared For:

Town of Truckee

Attn: Chantal Birnberg
Town of Truckee
Planning Department

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Senior Consultant

September 30, 2021

BOLLARD
Acoustical Consultants

Executive Summary

The use-permit for the Teichert Inc. Martis Valley aggregate plant requires that quarterly noise measurements be conducted to determine the compliance of Teichert operations with the noise standards of the Town of Truckee Development Code. Bollard Acoustical Consultants, Inc. (BAC) was retained by the Town of Truckee to prepare these analyses for the 2021 calendar year.

The results of the continuous noise level measurements and BAC observations conducted for the Summer 2021 quarter on August 23, 2021, indicate that noise levels attributable to Teichert Martis Valley sand and gravel operations did not exceed the applicable Town of Truckee daytime or nighttime noise level criteria at the noise measurement locations.

Criteria for Acceptable Noise Exposure

Town of Truckee Development Code

The Town of Truckee Development Code noise element contains criteria for acceptable exterior noise exposures in terms of day (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) periods in terms of various statistical descriptors. The Truckee noise standards are graduated, meaning that higher noise levels are allowed if the noise source is only generated for a short period of time, and the greater the percentage of time the noise is generated, the lower the noise level standard. For example, if the noise source is present for more than 50% of an hour, the noise level standard used for assessing compliance is the L_{50}. During daytime hours, the L_{50} noise level standard applicable to residential uses is 55 dB. Conversely, the noise level which is not to be exceeded for any duration of the hour (denoted L_{max} for maximum), is 75 dB during daytime hours. Due to the nature of the activities at the Teichert Martis Valley site, this analysis focuses on compliance with both the L_{50} and L_{max} noise level standards for both daytime and nighttime periods. Those standards are shown in Table 1.

Table 1
Truckee Municipal Code Noise Standards for Residential Uses

Noise Level Descriptor	Number of Minutes Per Hour	Daytime Standard	Nighttime Standard
L_{max}	0	75	70
L_{50}	30	55	50
Source: Truckee Municipal Code, Title 18, Development Code (Table 3-7)			

Evaluation of Current Noise Environment

Methodology

BAC conducted noise level measurements on August 23, 2021, at the two locations shown in Appendix A. The measurements were performed to evaluate the ambient noise environment at the outdoor activity areas of the residences located nearest to the Teichert Martis Valley facility. Specifically, measurements conducted at site 1 (near the residence at 14492 Royal Way) were intended to be representative of the ambient noise environment of the residences located off Royal Way and Cavalier Rise. Measurement site 2 was selected to be representative of the ambient noise environment at residences located near the terminus of Foxboro Drive (i.e., closest residences to the Teichert plant equipment). BAC staff conducted observations of Teichert operations during the noise survey to identify noise sources which contributed to the measured noise levels.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used for the continuous noise measurements. The meters were calibrated immediately before and after use with an LDL CAL-200 acoustical calibrator and meet all pertinent specifications of the American National Standards Institute (ANSI S1.4) for precision sound level measurement systems. The microphones were oriented vertically at a height of 5 feet above ground.

Weather conditions during the measurement period on August 23, 2021, consisted of moderately cold morning and afternoon temperatures, cloudy skies, light winds, and moderate humidity.

Noise Level Measurement Results

The sound level meters were programmed to report maximum (L_{max}) and median (L_{50}) levels for every ½ hour interval. The results of the continuous noise level measurements are provided in Appendix B in terms of these descriptors. Photographs of the measurement sites are provided in Appendix C.

According to Town of Truckee planning staff, the Teichert facility asphalt plant and rock crushing equipment was in normal operations from 7:00 a.m. to 1:00 p.m. on the day of the monitoring effort (August 23, 2021). As mentioned in the Spring compliance report, the facility relocated the jaw crusher equipment during the 2019-2020 winter season. The previous and new (current) locations of the jaw crusher are identified in Appendix A.

Maximum Noise Levels (L_{max}):

Because the nearest residences are located a considerable distance from Teichert operations, recorded maximum noise levels in the vicinity of those locations were generally not attributable to the Teichert equipment. Specifically, BAC field staff observations indicated that many of the recorded maximum levels were caused by other sources such as traffic, aircraft overflights, and train horns.

As indicated in Appendix B, measured maximum noise levels at site 1 ranged from a low of 54 dB L_{max} during the 7:30 a.m. to 8:00 a.m., 10:30 a.m. to 11:00 a.m., and 1:00 p.m. to 1:30 p.m. periods to a high of 67 dB L_{max} during the 10:00 a.m. to 10:30 a.m. period. The measured maximum noise levels at site 2, ranged from a low of 53 dB L_{max} during the 9:30 a.m. to 10:00 a.m. period to a high of 63 dB L_{max} during the 7:00 a.m. to 7:30 a.m. period.

Based on an analysis of the measurement data, measured maximum noise levels due to Teichert operations did not exceed the Town of Truckee Development Code 70 dB L_{max} prior to 7:00 a.m. or 75 dB L_{max} after 7:00 a.m. at any of the monitoring locations.

Median Noise Levels (L_{50}):

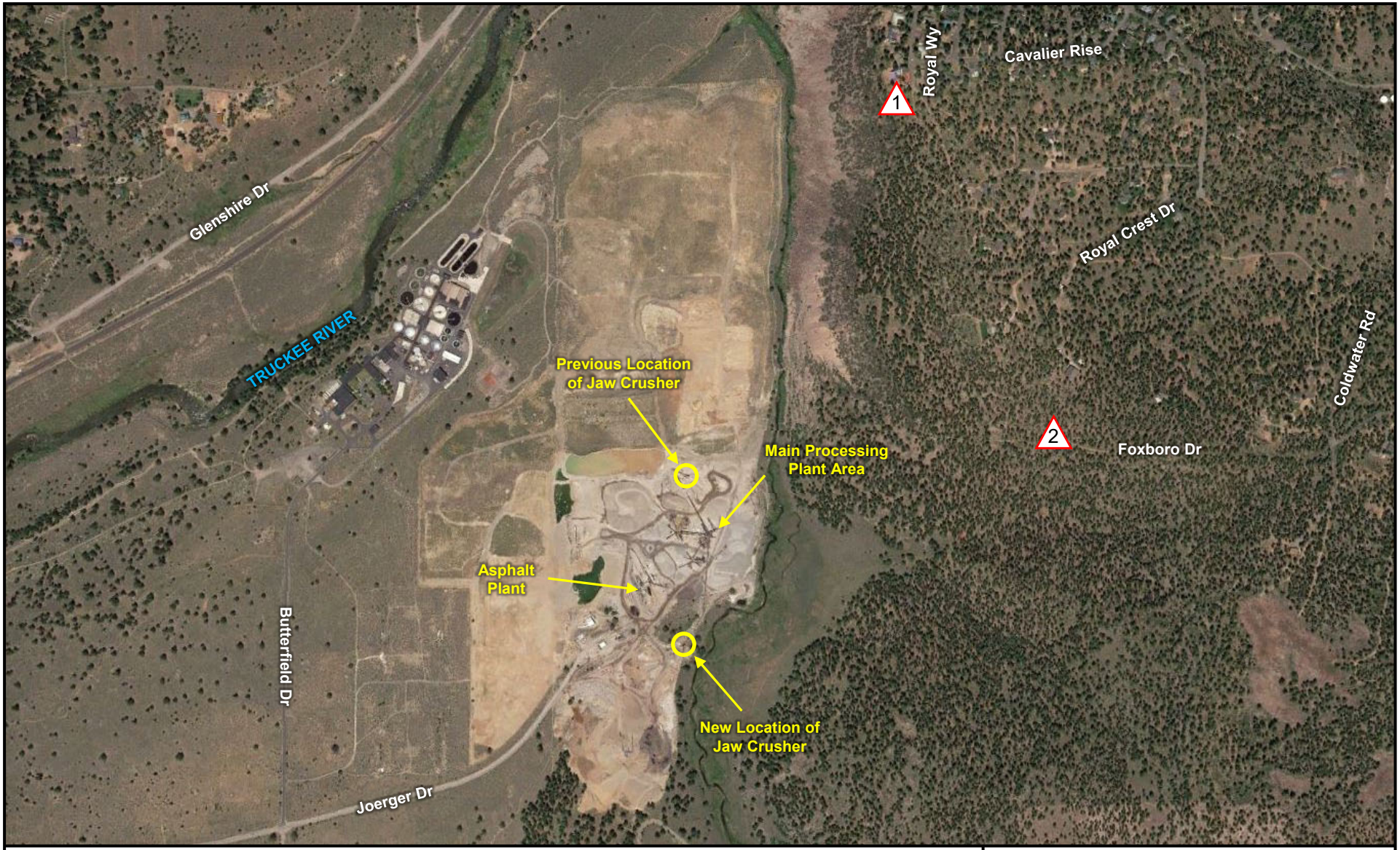
Because the Teichert operations typically occur continuously throughout any given hour, the noise level descriptor most suitable for addressing compliance with the Town of Truckee standards is the L_{50}, or median noise level.

The data contained in Appendix B indicate that measured median noise levels at site 1 ranged from a low of 46 dB L_{50} during the 6:30 a.m. to 7:00 a.m. period to high of 51 dB L_{50} during the 9:00 a.m. to 9:30 a.m. period. The measured median noise levels at site 2 ranged from a low of 45 dB L_{50} during the 6:30 a.m. to 7:00 a.m. period to high of 52 dB L_{50} during the 12:30 p.m. to 1:00 p.m. period.

Based on analysis of the measurement data, measured median noise levels due to Teichert operations did not exceed the Town of Truckee Development Code standards of 50 dB L_{50} prior to 7:00 a.m. or 55 dB L_{50} after 7:00 a.m. at any of the monitoring locations.

Conclusions

Based on the results of the noise level survey conducted August 23, 2021, noise levels generated from operations at the Teichert Martis Valley aggregate facility were found to satisfy the applicable Town of Truckee daytime and nighttime noise level criteria. Specifically, noise levels generated from facility asphalt plant and rock crushing equipment operations were found to comply with the applicable Town of Truckee daytime and nighttime noise level standards at all measurement sites.



Legend

Continuous Noise Measurement Sites

N

Scale (Feet)

0 600 1,200

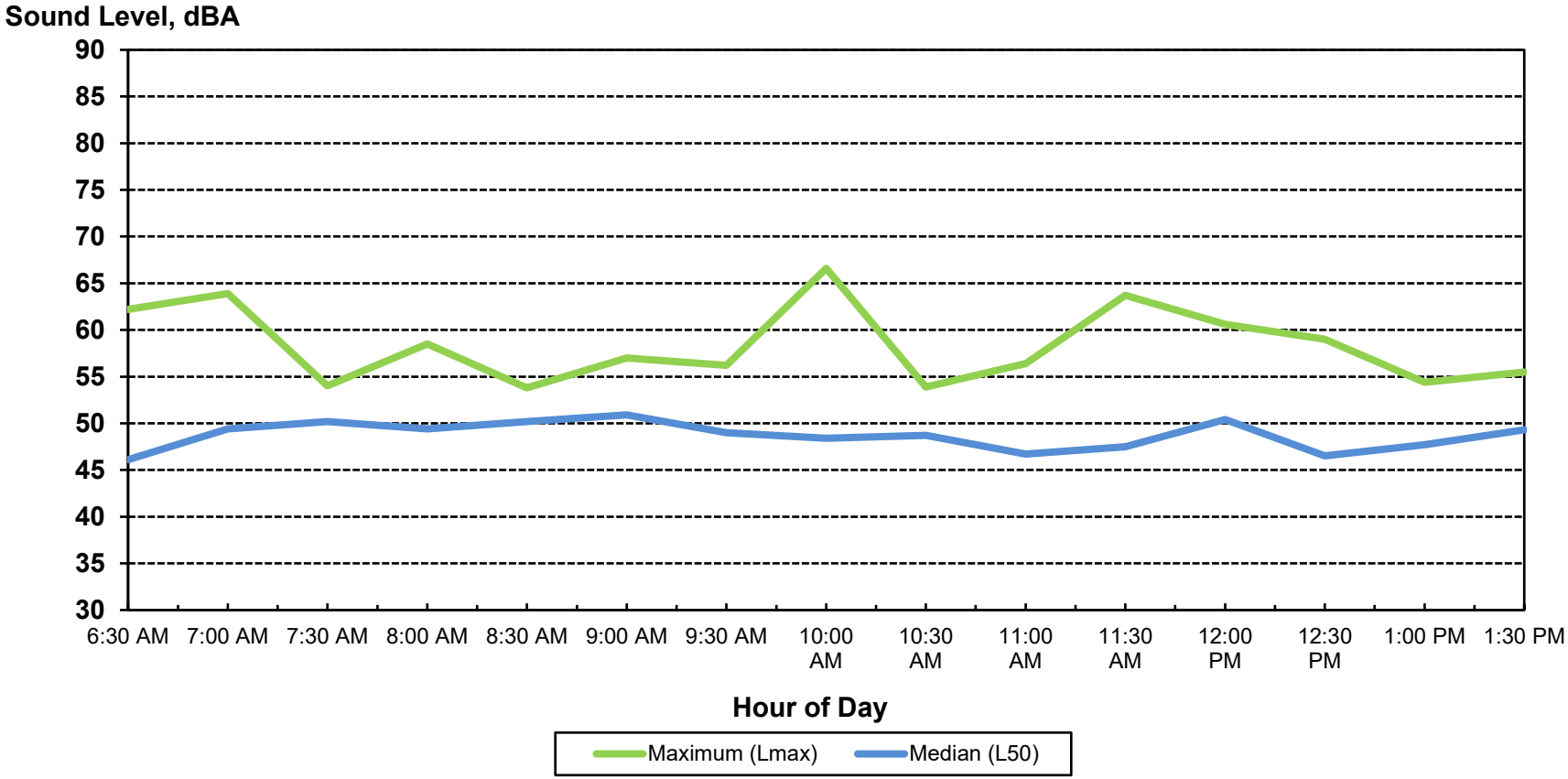
Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Summer 2021
Truckee, California

Noise Measurement Site Locations

Appendix A

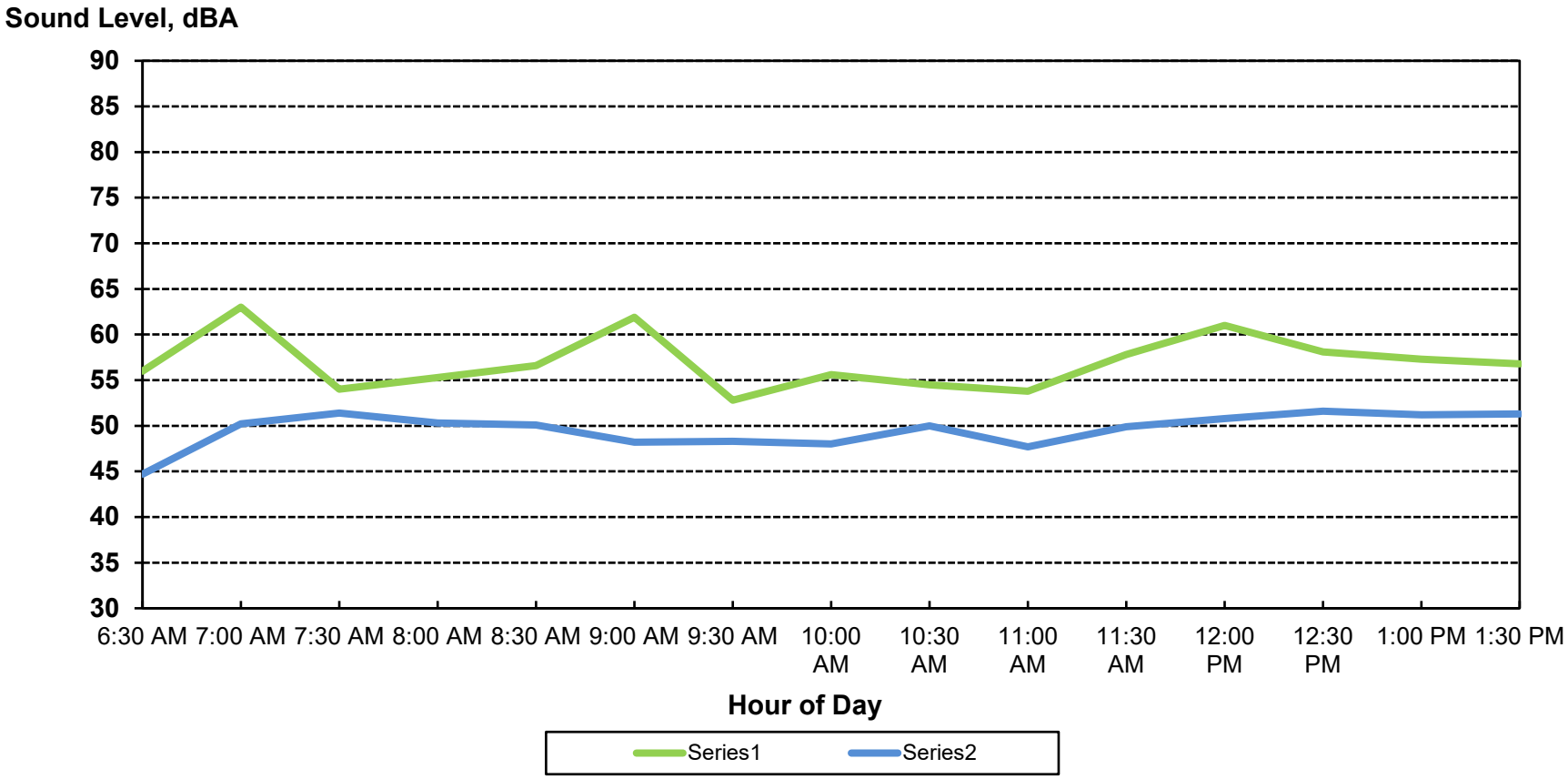
BOLLARD Acoustical Consultants

Appendix B-1
Noise Monitoring Results - Site 1
Teichert Martis Valley Quarterly Compliance - Summer 2021
Monday, August 23, 2021



BOLLARD
Acoustical Consultants

Appendix B-2
Noise Monitoring Results - Site 2
Teichert Martis Valley Quarterly Compliance - Summer 2021
Monday, August 23, 2021



BOLLARD
Acoustical Consultants

Legend

A: Site 1: Noise Monitoring Location Near Royal Way and Cavalier Rise
B: Site 2: Noise Monitoring Location Near the Terminus of Foxboro Drive

Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Summer 2021
Truckee, CA

Monitoring Survey Photographs

Appendix C

BOLLARD
Acoustical Consultants

Environmental Noise Assessment

Teichert Martis Valley Aggregate Facility
Quarterly Compliance Noise Monitoring – Spring 2022

Truckee, California

BAC Job # 2022-001

Prepared For:

Town of Truckee

Attn: Chantal Birnberg
Town of Truckee
Planning Department

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Principal Consultant

June 23, 2022

BOLLARD
Acoustical Consultants

Executive Summary

The use-permit for the Teichert Inc. Martis Valley aggregate plant requires that quarterly noise measurements be conducted to determine the compliance of Teichert operations with the noise standards of the Town of Truckee Development Code. Bollard Acoustical Consultants, Inc. (BAC) was retained by the Town of Truckee to prepare these analyses for the 2022 calendar year.

The results of the continuous noise level measurements and BAC observations conducted for the Spring 2022 quarter on June 3, 2022, indicate that, excluding measurement data determined to be significantly influenced by elevated wind conditions, noise levels attributable to Teichert Martis Valley sand and gravel operations did not exceed the applicable Town of Truckee daytime and nighttime noise level criteria at the noise measurement locations

Criteria for Acceptable Noise Exposure

Town of Truckee Development Code

The Town of Truckee Development Code noise element contains criteria for acceptable exterior noise exposures in terms of day (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) periods in terms of various statistical descriptors. The Truckee noise standards are graduated, meaning that higher noise levels are allowed if the noise source is only generated for a short period of time, and the greater the percentage of time the noise is generated, the lower the noise level standard. For example, if the noise source is present for more than 50% of an hour, the noise level standard used for assessing compliance is the L_{50}. During daytime hours, the L_{50} noise level standard applicable to residential uses is 55 dB. Conversely, the noise level which is not to be exceeded for any duration of the hour (denoted L_{max} for maximum), is 75 dB during daytime hours. Due to the nature of the activities at the Teichert Martis Valley site, this analysis focuses on compliance with both the L_{50} and L_{max} noise level standards for both daytime and nighttime periods. Those standards are shown in Table 1.

Table 1
Truckee Municipal Code Noise Standards for Residential Uses

Noise Level Descriptor	Number of Minutes Per Hour	Daytime Standard	Nighttime Standard
L_{max}	0	75	70
L_{50}	30	55	50

Source: Truckee Municipal Code, Title 18, Development Code (Table 3-7)

Evaluation of Current Noise Environment

Methodology

BAC conducted noise level measurements on June 3, 2022, at the two locations shown in Appendix A. The measurements were performed to evaluate the ambient noise environment at the outdoor activity areas of the residences located nearest to the Teichert Martis Valley facility. Specifically, measurements conducted at site 1 (near the residence at 14492 Royal Way) were intended to be representative of the ambient noise environment of the residences located off Royal Way and Cavalier Rise. Measurement site 2 was selected to be representative of the ambient noise environment at residences located near the terminus of Foxboro Drive (i.e., closest residences to the Teichert plant equipment). BAC staff conducted observations of Teichert operations during the noise survey to identify noise sources which contributed to the measured noise levels.

Larson Davis Laboratories (LDL) Model LxT and 831 precision integrating sound level meters were used for the continuous noise measurements. The meters were calibrated immediately before and after use with an LDL CAL-200 acoustical calibrator and meet all pertinent specifications of the American National Standards Institute (ANSI S1.4) for precision sound level measurement systems. The microphones were oriented vertically at a height of 5 feet above ground.

Weather conditions on the day of the measurements (June 3, 2022) were variable throughout the monitoring period. The weather conditions prior to 10:00 a.m. consisted of moderate temperatures, cloudy skies, high humidity, and calm wind speeds (0-5 mph with gusts up to 5 mph). However, from 10:00 a.m. to 1:30 p.m., winds in the area significantly increased to sustained speeds of 15 to 20 mph with gusts up to 30 mph. As a result, the data collected between the hours of 10:00 a.m. and the end of the BAC monitoring period were influenced primarily by the noise of wind in the trees.

Noise Level Measurement Results

The sound level meters were programmed to report maximum (L_{max}) and median (L_{50}) levels for every ½ hour interval. The results of the continuous noise level measurements are provided in Appendix B in terms of these descriptors. Photographs of the measurement sites are provided in Appendix C.

Upon analysis of the measurement data, BAC determined that maximum and median noise levels recorded at the measurement sites were significantly influenced by high winds in nearby trees, specifically during the time period of 10:00 a.m. to 1:30 p.m. As a result, the measurements taken during the 10:00 a.m. to 1:30 p.m. time period are considered to be unreliable. However, further analysis revealed that measurements obtained during the hours of 6:30 a.m. to 10:00 a.m. were relatively uninfluenced by the elevated wind conditions. As a result, BAC measurements from the 6:30 a.m. to 10:00 a.m. time period were used in the analysis of Teichert equipment noise levels on June 3, 2022.

Finally, according to Town of Truckee planning staff (via Teichert representative), the Teichert facility asphalt operations (Hot Plant) and rock crushing equipment operations (Rock Plant) were from 7:00 a.m. to 3:30 p.m. on the day of the monitoring effort (June 3, 2022). As mentioned in previously completed compliance reports, the facility relocated the jaw crusher equipment during the 2019-2020 winter season.

Maximum Noise Levels (L_{max}):

Because the nearest residences are located a considerable distance from Teichert operations, recorded maximum noise levels in the vicinity of those locations were generally not attributable to the Teichert equipment. Specifically, BAC field staff observations indicated that many of the recorded maximum levels were caused by other sources such as wind, traffic, aircraft overflights, and train horns.

As indicated in Appendix B, measured maximum noise levels at site 1 ranged from a low of 57 dB L_{max} during the 7:30 a.m. to 8:00 a.m. period to a high of 68 dB L_{max} during the 8:30 a.m. to 9:00 a.m. period. The measured maximum noise levels at site 2, ranged from a low of 56 dB L_{max} during the 7:00 a.m. to 7:30 a.m. period to a high of 65 dB L_{max} during the 8:00 a.m. to 8:30 a.m. period. As discussed previously, the measurements taken from 10:00 a.m. to 1:30 p.m. were significantly influenced by high winds in the trees and were determined to be unreliable for assessing compliance of Teichert's noise with the local standards. However, during the morning periods when sound propagation characteristics are most favorable and prior to the onset of the high winds, BAC noted that the Teichert-generated sound levels were below the Town's maximum noise criterion.

Based on an analysis of the measurement data from 6:30 a.m. to 10:00 a.m., measured maximum noise levels due to Teichert operations did not exceed the Town of Truckee Development Code 70 dB L_{max} prior to 7:00 a.m. or 75 dB L_{max} after 7:00 a.m. at either of the monitoring locations.

Median Noise Levels (L_{50}):

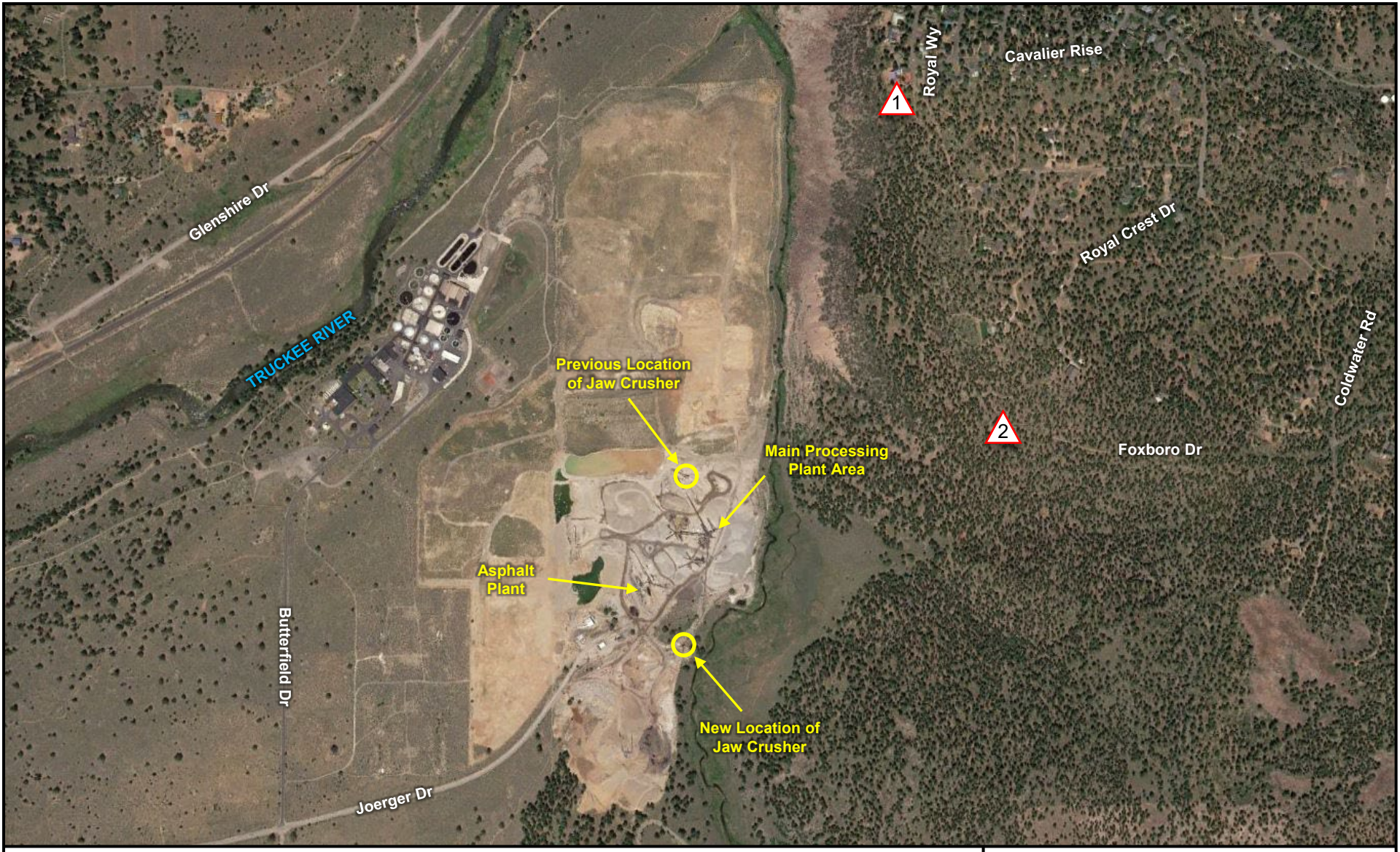
Because the Teichert operations typically occur continuously throughout any given hour, the noise level descriptor most suitable for addressing compliance with the Town of Truckee standards is the L_{50}, or median noise level.

The data contained in Appendix B indicate that measured median noise levels at site 1 ranged from a low of 44 dB L_{50} during the 9:30 a.m. to 10:00 a.m. period to high of 48 dB L_{50} during the 7:00 a.m. to 7:30 a.m. period. The measured median noise levels at site 2 ranged from a low of 47 dB L_{50} during the 8:30 a.m. to 9:00 a.m. period to high of 49 dB L_{50} during the 7:00 a.m. to 7:30 a.m. and 7:30 a.m. to 8:00 a.m. periods. As discussed previously, the measurements taken from 10:00 a.m. to 1:30 p.m. were significantly influenced by high winds in the trees and were determined to be unreliable for assessing compliance of Teichert's noise with the local standards. However, during the morning periods when sound propagation characteristics are most favorable and prior to the onset of the high winds, BAC noted that the Teichert-generated sound levels were below the Town's median noise criterion.

Based on an analysis of the measurement data from 6:30 a.m. to 10:00 a.m., measured median noise levels due to Teichert operations did not exceed the Town of Truckee Development Code standards of 50 dB L_{50} prior to 7:00 a.m. or 55 dB L_{50} after 7:00 a.m. at either of the monitoring locations.

Conclusions

Based on the results from the noise level survey conducted June 3, 2022, noise levels generated from operations at the Teichert Martis Valley aggregate facility were found to satisfy the applicable Town of Truckee daytime and nighttime noise level criteria. Specifically, excluding the measurement data that was determined to be significantly influenced by high winds (after 10:00 a.m.), noise levels generated from facility asphalt plant and rock crushing equipment operations were found to comply with the applicable Town of Truckee daytime and nighttime noise level standards at both measurement sites.



Legend

Continuous Noise Measurement Sites

N

Scale (Feet)

0 600 1,200

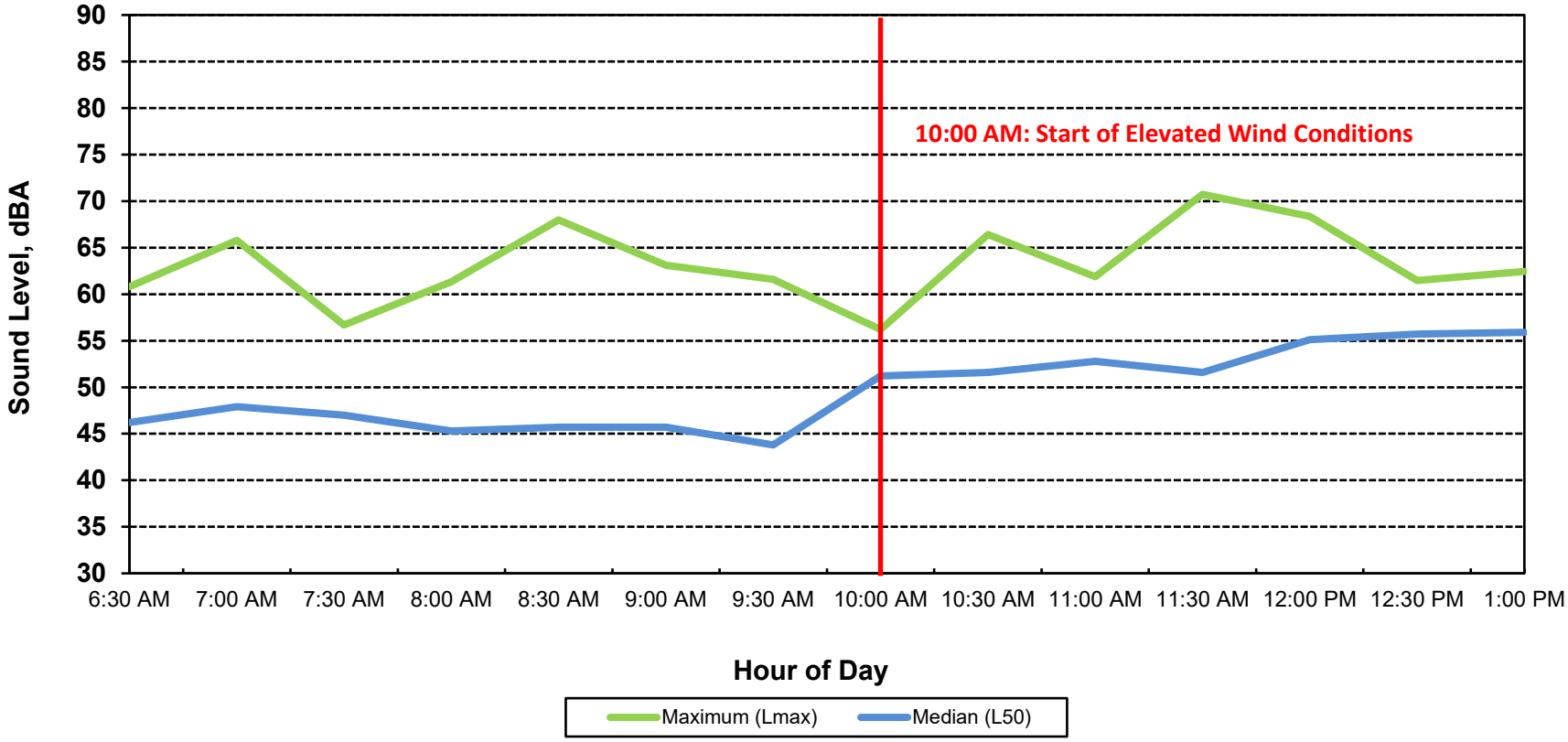
Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Spring 2022
Truckee, California

Noise Measurement Locations

Appendix A

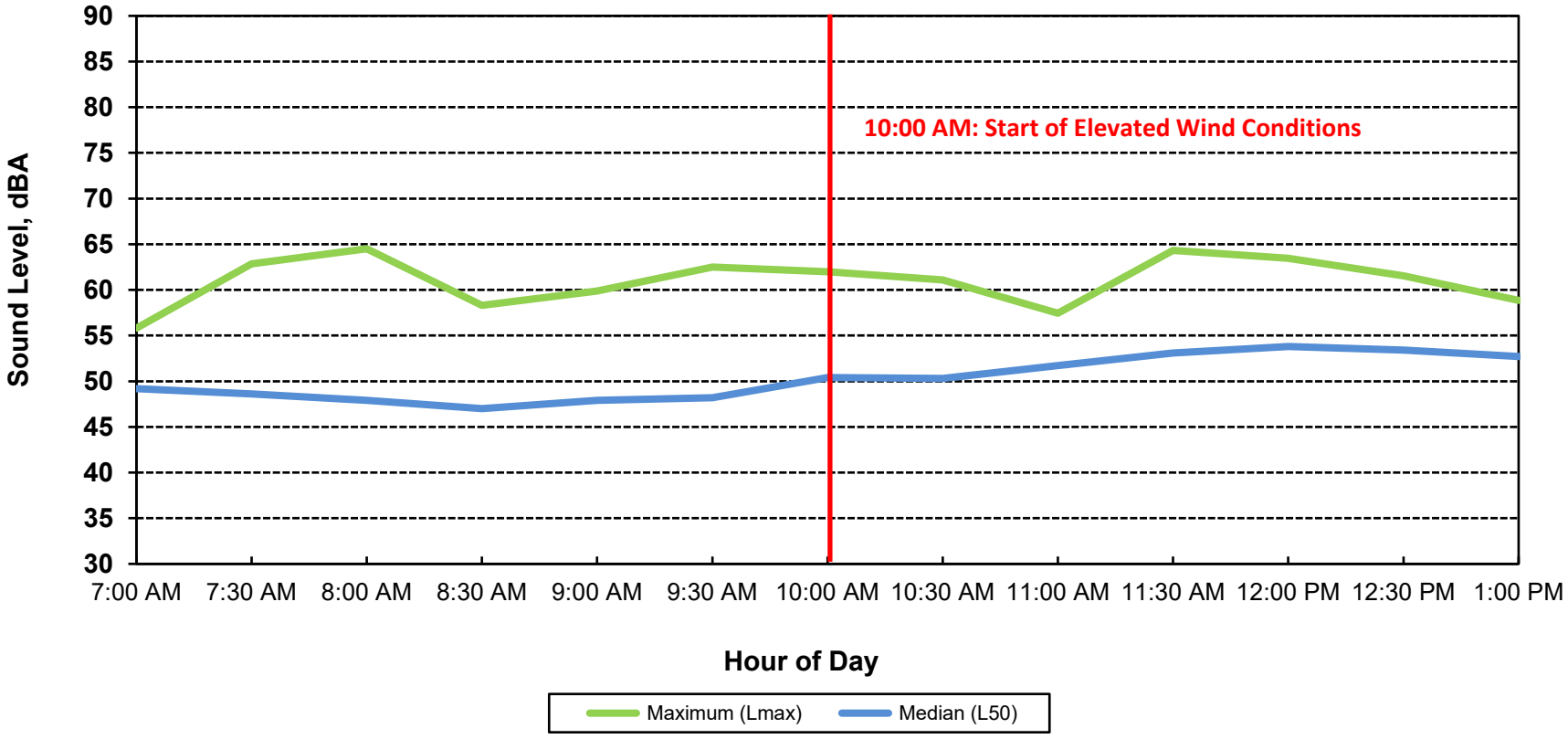
BOLLARD Acoustical Consultants

Appendix B-1
Noise Monitoring Results - Site 1
Teichert Martis Valley Quarterly Compliance - Spring 2022
Friday, June 03, 2022



BOLLARD
Acoustical Consultants

Appendix B-2
Noise Monitoring Results - Site 2
Teichert Martis Valley Quarterly Compliance - Spring 2022
Friday, June 03, 2022



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Acoustical Consultants

Legend

A: Site 1: Noise monitoring location near Royal Way and Cavalier Rise
B: Site 2: Noise monitoring location near the terminus of Foxboro Drive

Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Spring 2022
Truckee, California

Noise Survey Photographs

Appendix C

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Environmental Noise Assessment

Teichert Martis Valley Aggregate Facility
Quarterly Compliance Noise Monitoring – Summer 2022

Truckee, California

BAC Job # 2022-001

Prepared For:

Town of Truckee

Attn: Chantal Birnberg
Town of Truckee
Planning Department

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Principal Consultant

September 30, 2022

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Executive Summary

The use-permit for the Teichert Inc. Martis Valley aggregate plant requires that quarterly noise measurements be conducted to determine the compliance of Teichert operations with the noise standards of the Town of Truckee Development Code. Bollard Acoustical Consultants, Inc. (BAC) was retained by the Town of Truckee to prepare these analyses for the 2022 calendar year.

The results of the continuous noise level measurements and BAC observations conducted for the Summer 2022 quarter on August 12, 2022, indicate that, excluding measurement data determined to be significantly influenced by elevated wind conditions, noise levels attributable to Teichert Martis Valley sand and gravel operations did not exceed the applicable Town of Truckee daytime and nighttime noise level criteria at the noise measurement locations.

Criteria for Acceptable Noise Exposure

Town of Truckee Development Code

The Town of Truckee Development Code noise element contains criteria for acceptable exterior noise exposures in terms of day (7:00 a.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) periods in terms of various statistical descriptors. The Truckee noise standards are graduated, meaning that higher noise levels are allowed if the noise source is only generated for a short period of time, and the greater the percentage of time the noise is generated, the lower the noise level standard. For example, if the noise source is present for more than 50% of an hour, the noise level standard used for assessing compliance is the L_{50}. During daytime hours, the L_{50} noise level standard applicable to residential uses is 55 dB. Conversely, the noise level which is not to be exceeded for any duration of the hour (denoted L_{max} for maximum), is 75 dB during daytime hours. Due to the nature of the activities at the Teichert Martis Valley site, this analysis focuses on compliance with both the L_{50} and L_{max} noise level standards for both daytime and nighttime periods. Those standards are shown in Table 1.

Table 1
Truckee Municipal Code Noise Standards for Residential Uses

Noise Level Descriptor	Number of Minutes Per Hour	Daytime Standard	Nighttime Standard
L_{max}	0	75	70
L_{50}	30	55	50
Source: Truckee Municipal Code, Title 18, Development Code (Table 3-7)			

Evaluation of Current Noise Environment

Methodology

BAC conducted noise level measurements on August 12, 2022, at the two locations shown in Appendix A. The measurements were performed to evaluate the ambient noise environment at the outdoor activity areas of the residences located nearest to the Teichert Martis Valley facility. Specifically, measurements conducted at site 1 (near the residence at 14492 Royal Way) were intended to be representative of the ambient noise environment of the residences located off Royal Way and Cavalier Rise. Measurement site 2 was selected to be representative of the ambient noise environment at residences located near the terminus of Foxboro Drive (i.e., closest residences to the Teichert plant equipment). BAC staff conducted observations of Teichert operations during the noise survey to identify noise sources which contributed to the measured noise levels.

Larson Davis Laboratories (LDL) Model LxT precision integrating sound level meters were used for the continuous noise measurements. The meters were calibrated immediately before and after use with an LDL CAL-200 acoustical calibrator and meet all pertinent specifications of the American National Standards Institute (ANSI S1.4) for precision sound level measurement systems. The microphones were oriented vertically at a height of 5 feet above ground.

Weather conditions on the day of the measurements (August 12, 2022) were variable throughout the monitoring period. The weather conditions prior to 12:00 p.m. consisted of moderate temperatures, cloudy skies, moderate humidity, and calm wind speeds (0-5 mph). However, from 12:00 p.m. to 1:00 p.m., winds in the area significantly increased to sustained speeds of 15 with gusts up to 20 mph. As a result, the data collected between the hours of 12:00 p.m. and the end of the BAC monitoring period were influenced primarily by the noise of wind in the trees.

Noise Level Measurement Results

The sound level meters were programmed to report maximum (L_{max}) and median (L_{50}) levels for every ½ hour interval. The results of the continuous noise level measurements are provided in Appendix B in terms of these descriptors. Photographs of the measurement sites are provided in Appendix C.

Upon analysis of the measurement data, BAC determined that maximum and median noise levels recorded at the measurement sites were significantly influenced by high winds in nearby trees, specifically during the time period of 12:00 p.m. to 1:00 p.m. As a result, the measurements taken during the 12:00 p.m. to 1:00 p.m. time period are considered to be unreliable. However, further analysis revealed that measurements obtained during the hours of 6:30 a.m. to 12:00 p.m. were relatively uninfluenced by the elevated wind conditions. As a result, BAC measurements from the 6:30 a.m. to 12:00 p.m. time period were used in the analysis of Teichert equipment noise levels on August 12, 2022.

Finally, according to Town of Truckee planning staff (via Teichert representative), the Teichert facility asphalt operations (Hot Plant) and rock crushing equipment operations (Rock Plant) were from 7:00 a.m. to 4:00 p.m. on the day of the monitoring effort (August 12, 2022). As mentioned in previously completed compliance reports, the facility relocated the jaw crusher equipment during the 2019-2020 winter season.

Maximum Noise Levels (L_{max}):

Because the nearest residences are located a considerable distance from Teichert operations, recorded maximum noise levels in the vicinity of those locations were generally not attributable to the Teichert equipment. Specifically, BAC field staff observations indicated that many of the recorded maximum levels were caused by other sources such as wind, traffic, aircraft overflights, and train horns.

As indicated in Appendix B, measured maximum noise levels at site 1 ranged from a low of 53 dB L_{max} during the 8:00 a.m. to 8:30 a.m. period to a high of 65 dB L_{max} during the 8:30 a.m. to 9:00 a.m. period. The measured maximum noise levels at site 2, ranged from a low of 57 dB L_{max} during the 8:30 a.m. to 9:00 a.m. period to a high of 70 dB L_{max} during the 9:30 a.m. to 10:00 a.m. period. As discussed previously, the measurements taken after 12:00 p.m. were significantly influenced by high winds in the trees and were determined to be unreliable for assessing compliance of Teichert's noise with the local standards. However, during the morning periods when sound propagation characteristics are most favorable and prior to the onset of the high winds, BAC noted that the Teichert-generated sound levels were below the Town's maximum noise criterion.

Based on an analysis of the measurement data from 6:30 a.m. to 12:00 p.m., measured maximum noise levels due to Teichert operations did not exceed the Town of Truckee Development Code 70 dB L_{max} prior to 7:00 a.m. or 75 dB L_{max} after 7:00 a.m. at either of the monitoring locations.

Median Noise Levels (L_{50}):

Because the Teichert operations typically occur continuously throughout any given hour, the noise level descriptor most suitable for addressing compliance with the Town of Truckee standards is the L_{50}, or median noise level.

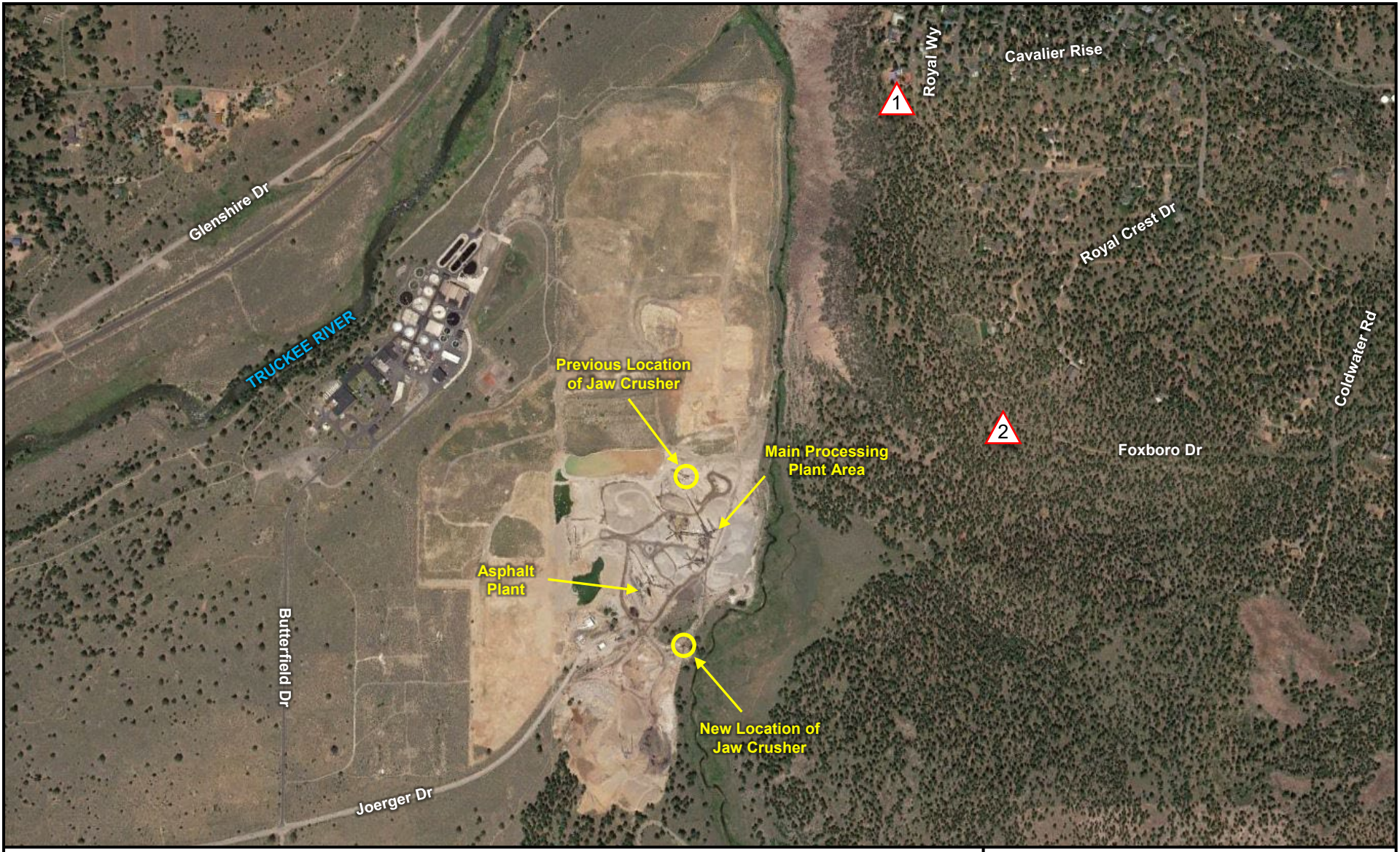
The data contained in Appendix B indicate that measured median noise levels at site 1 ranged from a low of 40 dB L_{50} during the 10:30 a.m. to 11:00 a.m. period to high of 49 dB L_{50} during the 7:30 a.m. to 8:00 a.m. period. The measured median noise levels at site 2 ranged from a low of 46 dB L_{50} during the 10:00 a.m. to 10:30 a.m. period to high of 52 dB L_{50} during the 7:00 a.m. to 7:30 a.m. period. As discussed previously, the measurements taken after 12:00 p.m. were significantly influenced by high winds in the trees and were determined to be unreliable for assessing compliance of Teichert's noise with the local standards. However, during the morning periods when sound propagation characteristics are most favorable and prior to the onset of the high winds, BAC noted that the Teichert-generated sound levels were below the Town's median noise criterion.

Based on an analysis of the measurement data from 6:30 a.m. to 12:00 p.m., measured median noise levels due to Teichert operations did not exceed the Town of Truckee Development Code standards of 50 dB L_{50} prior to 7:00 a.m. or 55 dB L_{50} after 7:00 a.m. at either of the monitoring locations.

Conclusions

Based on the results from the noise level survey conducted August 12, 2022, noise levels generated from operations at the Teichert Martis Valley aggregate facility were found to satisfy the applicable Town of Truckee daytime and nighttime noise level criteria. Specifically, excluding the measurement data that was determined to be significantly influenced by high winds (after 12:00 p.m.), noise levels generated from facility asphalt plant and rock crushing equipment operations were found to comply with the applicable Town of Truckee daytime and nighttime noise level standards at both measurement sites.

This concludes our environmental noise assessment for the Teichert Martis plant operations in Truckee, California. Please contact BAC at (530) 537-2328 or dariog@bacnoise.com with any questions.



Legend

Continuous Noise Measurement Sites

N

Scale (Feet)

0 600 1,200

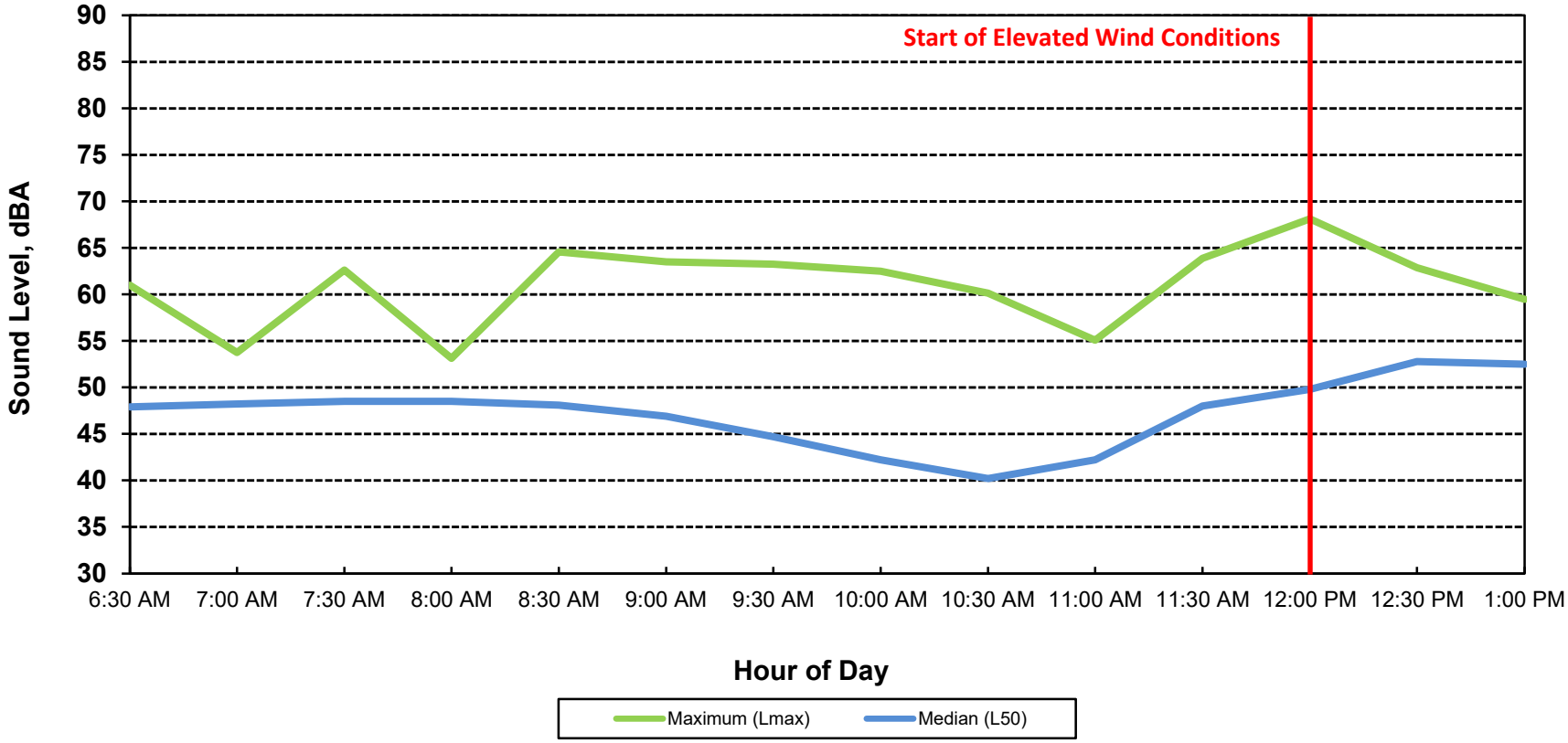
Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Summer 2022
Truckee, California

Noise Measurement Locations

Appendix A

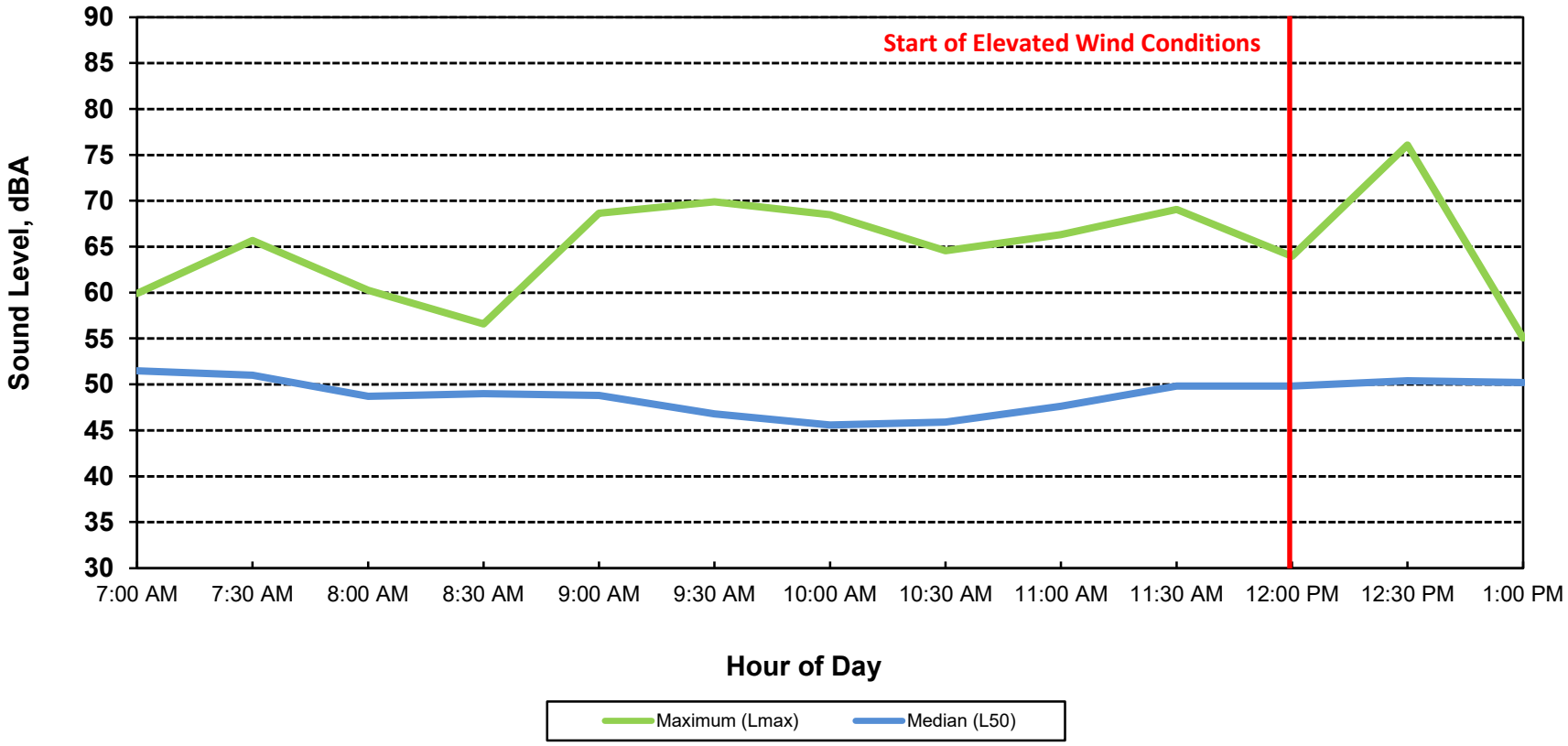
BOLLARD Acoustical Consultants

Appendix B-1
Noise Monitoring Results - Site 1
Teichert Martis Valley Quarterly Compliance - Summer 2022
Friday, August 12, 2022



BOLLARD
Acoustical Consultants

Appendix B-2
Noise Monitoring Results - Site 2
Teichert Martis Valley Quarterly Compliance - Summer 2022
Friday, August 12, 2022



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Legend

A: Site 1: Noise monitoring location near Royal Way and Cavalier Rise
B: Site 2: Noise monitoring location near the terminus of Foxboro Drive

Teichert Martis Valley Aggregate Facility
Quarterly Noise Monitoring – Summer 2022
Truckee, California

Noise Survey Photographs

Appendix C

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