# DRAFT
# ENVIRONMENTAL IMPACT STATEMENT

# MODIFICATION OF PERMIT TO MINE

## BUFFALO CRUSHED STONE QUARRY
## 500 COMO PARK BOULEVARD
## CHEEKTOWAGA, NEW YORK

**Lead Agency:**
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**BUFFALO CRUSHED STONE COMO PARK QUARRY**

**DRAFT ENVIRONMENTAL IMPACT STATEMENT**

**TABLE OF CONTENTS**

**LIST OF TABLES**



**LIST OF FIGURES**

**APPENDICES**

## 1.0 EXECUTIVE SUMMARY

### 1.1 Description of Proposed Action

The proposed action is modification of Buffalo Crushed Stone, Inc's. (BCS) existing Mined Land Reclamation Permit for its quarry located at 500 Como Park Boulevard, Town of Cheektowaga, Erie County, New York. In its application for the modification, BCS is seeking the New York State Department of Environmental Conservation's (NYSDEC) approval to take the following two actions:

1. To mine an approximately 40-acre area that is within the current quarry perimeter and surrounded on most sides by the previously mined quarry basin; and

2. To relocate the existing stone-processing and asphalt plants that are currently located on the proposed mining area into the eastern quarry basin. The area designated for the plants is previously mined and is approximately 150 feet below grade.

A copy of the application for permit modification is included in Appendix A.

The location of the project site is provided in Figure 1. The location of the isthmus within the project site is illustrated in Figure 2.

The proposed modification is intended to extend the productive life of the mine by approximately 20 years. It involves no increase in the volume or rate of mining or stone processing. The Como Park Boulevard quarry (the project site) has been operated since 1929. BCS produces high quality limestone and crushed limestone products at the project site.

The Mined Land Reclamation Plan that is a component of the subject permit modification application calls for the conversion of the quarry to a single, approximately 169-acre lake. The land surrounding the lake is to be restored through grading, stabilization and re-vegetation, making it suitable for development.

This Draft Environmental Impact Statement (DEIS) has been prepared in accordance with the requirements of the State Environmental Quality Review Act (SEQRA) to describe and analyze the environmental consequences of the proposed action. Pursuant to Title 6 of the New York Code, Rules and Regulations (NYCRR) Part 617(b) (4), this section provides a concise summary of the DEIS.

### 1.2 Beneficial Impacts

The extension of the productive life of the quarry extends the duration of these economic benefits associated with the Como Park quarry: 15 seasonal and 30 year-round jobs; local, state and federal tax payments; availability of high quality stone products, uses of

which include building and road construction in the region; local expenditures on fuel, equipment and operations; and indirect employment at goods and service providers used by BCS for the quarry's operation.

## 1.3 Unavoidable Adverse Impacts

The following briefly summarizes those adverse environmental impacts that cannot be avoided or fully mitigated if the proposed action is implemented:

- Air Resources - Occasional hydrogen sulfur dioxide odors near the quarry sump discharge outfall might be perceived. The loading of stone products into customer trucks and blasting can occasionally create a localized dust plume. The proposed action will extend the period during which the quarry emits dust and hydrogen sulfide.
- Ecological Resources - The existing terrestrial ecosystem on the isthmus will be converted to an aquatic ecosystem when the mining is ended and the proposed reclamation plan is implemented. This is the case for most of the area within the existing limits as stated in the quarry's current reclamation plan without mining the isthmus.
- Geology - The size of the topographic depression at the existing quarry will be increased. The limestone bedrock within the isthmus area will be permanently removed to a depth of approximately 150 feet.
- Noise - Noise from initial land preparation activities and daily mining operations on the upper-most bench will be slightly greater than current noise levels at two modeled residential receptors on the southern and eastern boundaries (550 Como Park Boulevard and west end of Second Street, respectively). Additionally, air overpressure from blasting events may cause annoyance in some residents living close to the quarry.
- Traffic -The proposed action will extend by approximately 20 years (i.e., the additional estimated life of mine) the period during which quarry-related truck traffic is on area roadways.
- Vibration - The subjective negative responses to the blasting as experienced by some members of the neighboring community are expected to continue.
- Water Resources - The depression of groundwater levels in the bedrock underlying the quarry will continue and the surface water sheeting pattern will be slightly modified.

As discussed within this DEIS, none of the impacts has been determined to be significant.

## 1.4 Mitigation Measures

BCS will adhere to current operating practices, permit conditions and other requirements to ensure impact avoidance and minimization are achieved. The following list describes the practices and / or requirements related to the impacts that cannot be avoided:

- Air Resources **-** BCS will continue to operate in compliance with its NYSDEC-issued air emissions permit and conditions. The water treatment system installed to control hydrogen sulfide-related odors and other parameters in discharge water will continue to be operated. Dust suppression practices will continue as well.
- Visual Resources and Noise **–** BCS will maintain the existing earthen berms and vegetative perimeter that serve as visual barriers and sound buffers. Blasting will continue to be undertaken during times of the day during which there is typically high activity in the community such as 11:00 AM to 3:00 PM and will continue to be performed in accordance with Vibra-Tech's blast design recommendations to minimize air overpressure.
- Vibration - The current methods of blast design, execution and monitoring will be followed as per Vibra-Tech Engineering, Inc. reporting and recommendations. Vibra-Tech is a contractor to BCS and is a nationally recognized blasting and vibration consulting firm. Their recommended methodologies have been proven effective in maintaining compliance with applicable regulatory limits for flyrock, air overpressure and ground vibrations at the Como Park mining site.
- Water Resources **-** The water treatment system installed to control hydrogen sulfide-related odors and other parameters in discharge water will continue to be operated. BCS will continue to operate in compliance with its NYSDEC-approved State Pollutant Discharge Elimination System (SPDES) Permit for water discharges and permit conditions.

## 1.5 Alternatives Considered

The DEIS identifies and comparatively analyzes a range of reasonable alternatives that are feasible considering the objectives and capabilities of the Project Sponsor. The alternatives evaluated are No Action, Alternative Scale or Magnitude, Alternative Use, Alternative Sites, Alternative Configurations and Alternative Technologies.

The alternatives that were analyzed are summarized below.

The "no action" alternative, also referred to as the "no build" alternative, would involve the continued current mining and other operations on the project site in accordance with the existing Mined Land Reclamation Permit for the duration of the life of mine. Mining of the site would continue until all permitted reserves have been removed, the time frame for which is estimated at 20 years based upon current production rates. The current NYSDEC-approved Mined Land Reclamation Plan would be implemented following the

completion of active mining. The plan calls for the establishment of two lakes with the surrounding land being graded, stabilized and re-vegetated.

The analysis indicated that some insignificant adverse environmental impacts associated with the proposed action would be avoided with the "no action" alternative. However, its implementation would induce other adverse impacts as described in Section 7.1 and cause earlier termination of the quarry's economic benefits.

Variations to the proposed action in terms of scale or magnitude that, if implemented, would achieve the same or similar effects and result in the same or a reduced level of impacts are the focus of the alternative scale or magnitude analysis. The physical constraints of the isthmus (i.e., being bound to the north by the railroad and to the east and west by the existing quarry basins) eliminate the possibility of increasing the scale of the mining operation in this area. Therefore, the analysis focused on smaller scale variations of the proposed action and determined that a smaller-scale project would not substantially reduce environmental impacts when compared to the proposed action. Further, it would not fully satisfy the economic requirements for feasibility.

The project site is a zoned Special Aggregate District. With the exception of the extraction of mineral resources and the manufacturing of bituminous products, presently no viable alternative uses are consistent with the Town of Cheektowaga zoning regulations for the project area. Any other use of the site would require approval of a re-zoning application.

The alternative use analysis indicates that current site zoning, BCS's sole business objective and the physical characteristics of the isthmus significantly limit the isthmus' potential for an alternative use prior to reclamation.

The mining of the isthmus is inextricably tied to a natural resource (limestone) located at this particular site. Therefore, for another site to be considered, it must contain the same quantity and quality of the resource of interest. Furthermore, consideration is limited to those sites owned or under option by BCS. Due to those conditions and other considerations, expansion of the Como Park quarry and BCS's Wehrle Drive quarry are the two alternatives evaluated.

The alternative site analysis concluded that the lateral expansion of the existing Como Park Boulevard quarry would result in more extensive impacts than the mining of the isthmus as proposed. The analysis also indicated that the Wehrle Drive site does not appear to be a reasonable substitute for the proposed action due to re-zoning requirements, increased transportation costs to supply products to projects in the metropolitan Buffalo area and to the south and increased resource demands.

Based upon the nature of the mining component of the proposed action, which involves the removal of a fixed mineral resource, the alternative configuration analysis focused on other possible options for relocating the crushing and asphalt plants. The three

configurations considered are: the relocation of the existing processing and asphalt plants into the western quarry basin; the relocation of the existing processing and asphalt plants to the northeast of the existing quarry onto properties owned by BCS; and the relocation of the crushing and asphalt plants into the east quarry (as proposed) in conjunction with the relocation of the quarry entrance from Como Park Boulevard to Indian Road. Site constraints and the lack of any relative benefits in terms of environmental impacts over placement of the quarry in the east basin make the west-basin relocation infeasible. The northeastern relocation was found to be infeasible as well because it would require a special use permit and was previously opposed by the Town of Cheektowaga. The relocation of the quarry entrance to Indian Road was found to present no significant environmental benefit over the proposed action.

Alternative technologies were evaluated in the context of process improvements over current practices in terms of environmental impacts. The analysis focused on alternatives to drilling, blasting, loading and movement of the limestone from the mine face to the processing facilities. The review of alternative technologies was limited to those technologies that are proven effective, have the ability to avoid or significantly reduce the potential health of safety impacts of the proposed action and are not cost-prohibitive.

The analysis determined that reductions in the environmental impacts associated with the alternative technologies may be cancelled by the need to operate multiple pieces of equipment or more extensive equipment and that the economics of operating the equipment needed to maintain production rates are often prohibitive.

## 1.6 Controversial Issues

In 1998, BCS filed a lawsuit against the Town of Cheektowaga regarding the Como Park Boulevard Quarry. In the lawsuit, BCS alleges that its NYSDEC-issued Mined Land Reclamation Permit supersedes the Town's zoning ordinance. Due to that, BCS claims that it is authorized by the NYSDEC-issued Permit to mine more acreage than what was designated to be within the Town's Special Aggregate zoning district. This has led to a discrepancy between the area the Town includes in its zoning-based descriptions and figures and those used by BCS. The matter remains in litigation.

## 1.7 Matters to be Decided

The proposed modification to BCS's Mined Land Reclamation Permit is the primary matter under consideration at this time. Should the proposed action be approved, the NYSDEC has stated the air permit for the project site would be reviewed and updated as deemed necessary. Also, if the action is approved, BCS will amend its Storm Water Pollution Prevention Plan as needed.

## 2.0 INTRODUCTION

### 2.1 Description of the Proposed Action

Buffalo Crushed Stone, Inc. (BCS) has submitted to the New York State Department of Environmental Conservation (NYSDEC) an application to modify its existing Mined Land Reclamation Permit (#9-02626/NYSDEC No. 9-1430-00014/00011). The Permit is for operations at its "Como Plant 21" site, which is located at 500 Como Park Boulevard, Town of Cheektowaga, Erie County, New York. The present permit term expires on May 9, 2008.

In its application, BCS is specifically seeking the NYSDEC's approval to take two actions at its Como Park Boulevard plant. Those actions are:

1. To mine an approximately 40-acre area that is within the current quarry perimeter and surrounded on most sides by the previously mined quarry basin; and
2. To relocate the existing stone-processing and asphalt plants that are currently located on the proposed mining area into the eastern quarry basin. The area designated for the plants is previously mined and is approximately 150 feet below grade.

The Como Park Boulevard quarry (the project site) has been operated since 1929. BCS produces from the project site high quality limestone and crushed limestone products. The quarry site currently is composed of east and west basins with existing support buildings and stone-processing equipment located between the two basins. Refer to Figure 3, which illustrates the existing site plan. The area between the two basins is referred to as the "isthmus" and is the area for which BCS is seeking approval to mine (Action 1 above). The isthmus will be progressively mined. This activity will eliminate the separation of the east and west basins. When the mineral resources have been fully mined from the isthmus, the quarry will be essentially one large basin. Refer to Figure 4, which illustrates the proposed site plan.

The mineral resources from the isthmus will become the raw material supply for the on-site asphalt plant and support the direct stone and aggregate sales at the project site. The resources in the isthmus are expected to have a mining life of approximately 20 years; thereby extending the useful life of the quarry by this additional period (i.e., an additional 20+/- years). The proposed modification will permit BCS to extend the productive life of the quarry without encroaching outward from the existing limits of the basin margins.

The existing mineral-processing facilities will not be expanded nor added to. equipment already on the site will be relocated to enable the mining of the isthmus. The relocation of the equipment and the mining of the isthmus will not increase the current rate of production at the project site. BCS will mine the isthmus and operate the support facilities

and production plants in a manner consistent with current operations at the Como Park site.

A revised Mining Reclamation Plan was submitted with the application for permit modification and is provided as part of Appendix A. Per the plan, upon termination of mining, the ultimate use of the quarry will be a single lake surrounded by vegetation. In land areas with insufficient soil cover to support re-vegetation, additional soil and seed will be distributed. Additional seeding will occur as needed. Where practical, areas may be reclaimed in a phased manner as excavation and rock removal are completed. Mining, seeding and reclamation thus might occur simultaneously within the project site.

Upon reclamation, the perimeter areas could support residential, commercial or recreational uses. However, it is noted that any use other than a quarry-related operation will require re-zoning and other appropriate approvals.

## 2.2 Site Description

The project site is located in the Town of Cheektowaga. It is situated east of Union Road, north of Como Park Boulevard and west of Indian Road. The project site is surrounded within that general area by set backs, berms, buffer zones and various landmarks and land uses. Figure 1 shows the site location.

The quarry site has been in operation since 1929 under several successive owners. During this period, about 219 acres have been subject to mining. Presently, BCS is removing limestone from several discrete areas within the 219 acres, which is the acreage authorized by the NYSDEC for mining. These active areas are in both the aforementioned west and east basins. Figure 3 depicts the existing quarry site plan.

The entire northern boundary of the project site is an active rail corridor. At its northeast border, the project site abuts other property owned by BCS. From the northeast corner heading south, the border is established by a set back and buffer from Indian Road for about 800 feet. Then, the border consists of a set back and buffer from residential properties on Indian Road. The project site's southern border is formed by land owned by BCS and a mixture of residential, commercial and institutional properties, and Como Park Boulevard. On its western perimeter, the project site is bounded by property owned by BCS and commercial property (see Figure 10).

Land use in the immediate vicinity of the project site is as follows:

- To the north (beyond the rail corridor) is light industrial;
- On the east side of Indian Road is the closed Schultz solid waste landfill;
- To the southeast are a residential subdivision, municipal park, and nature preserve;
- On the south side of Como Park Boulevard are residential, institutional, commercial, and industrial land uses;

- To the southwest are residential and commercial uses; and
- To the northwest of the project site are municipal facilities.

## 2.3 Background of Proposed Action

### 2.3.1 Ownership and Operation

The Federal Crushed Stone Corporation, a subsidiary of the Buffalo Slag Company, initiated operations at the project site in 1929. In 1967, the Koppers Road Materials Division acquired the entire assets of the Buffalo Slag Company, including the project site. BCS acquired these assets from Koppers in 1983 and has been since that time the operator of the project site.

In July 2000, BCS was acquired by New Enterprise Stone and Lime Company, Inc., a privately held company with corporate headquarters at 3912 Brumbaugh Road, New Enterprise, Pennsylvania. BCS is a wholly-owned subsidiary of New Enterprise Stone and Lime Company, Inc.

### 2.3.2 Registration and Permitting

The Como Park quarry has been an active mining site for over 75 years. The quarry was registered duly with the NYSDEC in 1975. In 1980, a Mined Land Reclamation Permit application and associated Mining and Reclamation Plans for the project site were submitted to the NYSDEC. The 1980 submittal was made in compliance with the then-recently-enacted Mined Land Reclamation Law (Article 23, Title 27 – Environmental Conservation Law) and its implementing regulations, 6 NYCRR Part 420-426. The NYSDEC approved that application and associated plans. Since that initial permit, BCS has submitted to the NYSDEC and received authorization of all subsequent permit renewals.

In September 2004, BCS applied to the NYSDEC for a modification of the existing permit #9-02626/NYSDEC No. 9-1430-00014/00011. The requested modifications are:

1. To mine an approximately 40-acre area that is within the current quarry perimeter and surrounded on most sides by the previously mined quarry basin.

2. To relocate the existing stone-processing and asphalt plants that are currently located on the proposed mining area into the eastern quarry basin. The area designated for the plants is previously mined and is approximately 150 feet below grade.

The NYSDEC initiated the SEQRA process and sent a coordination letter in October 2004 to potentially interested agencies. The NYSDEC stated in that letter that it: intended to assume the SEQRA lead agency status; had determined the proposed action

to be a Type 1 Action; intended to issue a Positive Declaration (see Appendix A); requiring a DEIS to be prepared by the applicant. This DEIS fulfills that requirement.

The issues to be addressed in the DEIS were established through the scoping process. In this instance, that process consisted of coordinated review by interested agencies, a public meeting, written comments and scoping meetings with NYSDEC staff. The components of the Final Scoping Document were accepted by the NYSDEC on September 14, 2005. The Final Scoping Document is on file at the public document repositories for the proposed project. The repositories are:

- The Cheektowaga Town Hall, 3301 Broadway, Cheektowaga;
- Julia Boyer Reinstein Library, 1030 Losson Road, Cheektowaga; and
- Buffalo Crushed Stone, Inc., 2544 Clinton Street, West Seneca.

### 2.3.3 Pending Issues Relevant to the Project Site

The Town of Cheektowaga and BCS are currently in litigation over an issue related to the project site that does not affect the proposed action. In 1998, BCS filed a lawsuit against the Town regarding the Como Park Boulevard Quarry. In the lawsuit, BCS alleges that their NYSDEC-issued Mined Land Reclamation Permit supersedes the Town's zoning ordinance. Due to that, BCS claims that it is authorized by the NYSDEC-issued permit to mine more acreage than what was designated to be within the Town's Special Aggregate zoning district. The litigation is in progress.

The isthmus and the area designated for the equipment relocation are not within the area being contested.

## 2.4 Project Purpose, Need and Benefits

The requested permit modifications will enable the extraction of mineral resources from within the boundary of an already operational quarry. The deposit of limestone within the isthmus has four attributes that make it an exceptional mineral resource:

- Proven high quality;
- It exists close enough to the surface to make extraction possible;
- Easy access due to existing site conditions; and
- Of a sufficient volume to make its extraction economically feasible.

Mining the isthmus will increase the productive life of the quarry. Hence, the requested permit modifications would enable the continued supply of crushed stone products to satisfy regional demands for the construction and maintenance of infrastructure, as well as for other public, commercial, private and residential construction work and maintenance. The existing quarry produces numerous products that satisfy state and federal specifications, including crushed stone; bituminous and ready-mix cement

concrete aggregates; road construction-base materials; and rip-rap revetment stone. These materials are required for numerous public works and private projects throughout the region.

According to the New York State Department of Transportation (NYSDOT) Technical Services Division as of March 6, 2006, the project site is one of only three sources in NYSDOT Region 5 approved for stone products that satisfy the NYSDOT's Type 1 requirements for friction aggregates. NYSDOT Region 5 encompasses Niagara, Erie, Chautauqua and Cattaraugus Counties. Asphalt containing Type 1 friction aggregate provides more friction on the surface, enabling better vehicle handling and stopping in wet conditions.

Given the limited number of quarries in the region capable of producing Type 1 friction aggregates, the continued operation of the quarry will help to maintain the cost of these materials, which has a direct bearing on the cost of public highway projects in the area. Should the demand for Type 1 friction aggregates exceed the production of these materials at local quarries, these materials would have to be imported from sources located outside of the region. This would likely increase the cost of these materials due to added transportation fees, thereby increasing the cost of public road construction and repair projects throughout the area. As such, the economic benefits of having a local source of these materials are shared by all taxpayers in western New York.

Additionally, mining of the isthmus will directly benefit employment in the area by maintaining the jobs at the existing quarry, as well as those of local truck drivers involved in the transport of products generated at the quarry to local construction sites. The maintenance of economical prices for construction materials produced by the quarry is also assumed to have implications on the number of construction projects and corresponding jobs occurring in the area.

business centers on the extraction, processing and sale of mineral resources from its existing quarries and mine sites in western New York. Accordingly, the sustained operation of its Cheektowaga quarry via permit modification is consistent with its business plans and objectives. The presence of extensive processing and distribution facilities at the existing quarry, as well as its proximity to the New York State Thruway and ease of access to major urban and suburban population centers in the region, also make this site an ideal location for continued operation.

The mining of the isthmus, the completion of this DEIS and BCS's mining practices support the intent of New York State's Mined Land Reclamation Law:

> "…it is the policy of this state to foster and encourage the development of an economically sound and stable mining industry, and the orderly development of domestic mineral resources and reserves necessary to assure satisfaction of economic needs compatible with sound environmental practices." Mined Land Reclamation Law Declaration of Policy (§23-2703).

## 3.0 PROJECT DESCRIPTION

### 3.1 General Discussion

As presented in Section 2.1, the proposed action will entail moving the stone-processing plant and existing asphalt plants from their present locations into the east quarry basin (at the existing floor level, which is approximately 150 feet below the surface) and mining the area that separates the east basin from the west basin (see Figure 2). This area is referred to as the "isthmus" and includes approximately 40 acres of land on the project site.

Activities that currently occur at the existing quarry will be prolonged due to the proposed action, but will not be substantially modified or magnified in any respect. These activities are considered part of the existing quarry and the baseline condition for impact evaluation purposes.

The following sections describe the major project elements associated with the implementation of the proposed action.

### 3.2 Site Preparation

Site preparation activities with regard to the proposed action will be initiated by relocating the existing stone-crushing plant, as well as the two of the three existing asphalt plants into the east quarry basin. The third plant will be decommissioned. A supply/haul road will be constructed from the existing gate at Como Park Boulevard down to the crushing and asphalt plants. The existing stone piles will be drawn down through normal sales until they are exhausted and any remaining surplus materials will be used in the construction of the new supply/haul road. The majority of overburden on the isthmus has been removed through previous, general site use. Overburden removed from the isthmus as part of site preparation will be examined for potential contamination. This will include visual inspection for evidence of contamination (e.g., staining, discoloration, etc.) and field screening for the presence of organic vapors using a hand-held photoionization detector. What is found to be clean and acceptable will be used on site. Any material suspected of contamination or otherwise unacceptable will be disposed of in accordance with applicable regulations. The inspection procedure will be documented, logs kept of the process and records maintained in accordance with requirements.

### 3.3 Quarry Progression

Mining of the isthmus will be initiated by drilling along the western perimeter of the isthmus. Line drilling will involve the drilling of vertical holes spaced per blast design in the bedrock along the western boundary of the isthmus. The holes will be drilled to a depth of 30-35 feet, which is equal to the desired thickness of each layer or bench of limestone that will be removed from the isthmus for the purpose of achieving a clean-cut edge along the isthmus. Quarrying will then proceed generally from the west quarry

basin toward the east quarry basin. In each phase, controlled blasting techniques will be used to remove the limestone using a 30-35-foot bench height. The benches will typically proceed along north-south trending faces in a direction that is perpendicular to the northern and southern quarry walls until they reach the east quarry basin. Benches will be advanced across the isthmus until the mining depth is approximately 150-feet below the top of the rim. Using a 30-35 foot bench height, four or five benches will be required in the isthmus.

## 3.4 Drilling and Blasting Procedures

Blasting operations at the quarry will be performed in accordance with the requirements of Industrial Code Rule 39 (12 NYCRR 39), *Possession, Handling, Storage and Transportation of Explosives*. The rule is available at http://www.labor.state.ny.us/workerprotection/safetyhealth/sh39.shtm. As such, a licensed blaster will supervise all blasting operations at the quarry, including blast design, and the handling and placement of explosives, and will also directly perform the detonation of the explosives. No explosive materials will be stored on the existing quarry site or the isthmus. Instead, the explosives will be transported to the project site in properly constructed vehicular storage magazines in accordance with the requirements of section 39.11 of Industrial Code Rule 39.

Drilling of vertical blast holes will be performed using a hydraulic rotary-percussion drill. The blast holes will be sub-drilled, if necessary, to a depth that slightly exceeds the target bench height (30-35 feet) to ensure that the holes break to the full depth of the bench. The sub-drill portion of the blast hole is the length that extends beyond the next bench floor level. The sub-drill is included in the blast design to provide adequate broken rock sub-grade to develop working benches.

The number of blast holes and drill pattern will be determined prior to each blasting event, and will be designed to optimize breakage and fragmentation while maximizing control. Blasting will be performed in conformance with Vibra-Tech's recommendations. The recommendations are provided in "Measurement and Analysis of Blast Induced Ground and Air Vibration in the Vicinity of the Buffalo Crushed Stone Quarry, Cheektowaga, New York on November 30, 2000 Using IsoSeismic RSVP and Vibra-Map Techniques", which is available for review at BCS's office located at 2544 Clinton Street, Buffalo, New York 14224. The drill pattern will vary depending upon field conditions.

The blast holes will be loaded with explosive material and stemmed with a suitable material. Stemming refers to filling the uppermost portion of the blast hole with gravel filtered to a certain size range. The stemming acts as a plug and forces the explosive energy to go into the surrounding rock, rather than back out of the blast hole. The charge weight and delay will be based upon the blast design. A powder factor (tons of stone/pounds of explosive) of 2.5-3.0 will typically be used. Based upon the amount of rock generated by a 30-35 foot bench height, it is anticipated that blasting will occur on approximately eight-day intervals to ensure adequate volume of material for processing.

Blasting will generally occur between the hours of 11:00 A.M. and 3:00 P.M on weekdays. Other operational details are provided in Section 3.7, below and more details on blasting procedures are provided in Section 5.2.3.

## 3.5 Rock Removal and Processing

Stone dislodged from the quarry face via blasting will be pushed into the quarry using a bulldozer, or will be loaded onto trucks at the active quarry face. It is anticipated that the former method will be used initially, with the latter method applied when sufficient room is available on the level of the active face to allow the maneuvering and loading of trucks. Whether at the active face or on the quarry floor, the stone will be loaded onto 50-ton capacity trucks using a front-end loader, and will be transported to the primary crusher situated within the east basin of the existing quarry. Loading and moving of stone will be performed in the same manner as is currently used at the existing quarry, which involves the use of one front-end loader and three 50-ton capacity trucks. Crushing and screening of the stone to obtain the desired product will be performed at the existing quarry using facilities and equipment similar to those currently used.

Some limited stone processing will occur on the bench for the purpose of generating rip-rap and other large-size stone products to meet customer demands, and /or to reduce the size of large blocks that exceed the primary crusher's capacity. These processing activities will be performed in accordance with the current practice at the existing quarry, which involves the use of a hoe-ram for size reduction. Based upon current operations at the quarry, processing on the bench will occur several days per month.

## 3.6 Loading and Distribution of Products

While the stone-processing and loading areas for stone and asphalt will be relocated to the east quarry basin, the proposed action includes no substantial variation in how products from the quarry will be loaded and distributed to customers. Customer trucks will enter and exit the site via the existing access road on Como Park Boulevard. Large-size stone products processed on the bench will continue to be directly loaded into customer trucks on the quarry floor using a front loader. Customer trucks will also be loaded with asphalt at the asphalt plants or with stone products from stockpiles maintained at or near the crushing and screening plant.

## 3.7 Operating Schedule

Quarry operations coincide with the local construction season, which varies throughout the year. The quarry will continue to operate in accordance with its current schedule, which is typically as presented below.

TABLE 1 OPERATING SCHEDULE

| | |
|---|---|
| ANNUAL SCHEDULE * | |
| Quarry and Plant Production: | Mid-March through Mid-December |
| Equipment and Facility Maintenance: | Mid-December through Mid-March |
| | |
| WEEKLY OPERATING SCHEDULE * | |
| Quarry and Plant Production: | Monday-Friday |
| Equipment Maintenance | Saturday |
| | |
| DAILY OPERATING SCHEDULE* | |
| Equipment/ Facility Start-Up: | 5:30 AM – 6:30 AM |
| Quarry and Plant Operation: | 6:30 AM – 4:30 PM |
| Blasting: | 11:00 AM – 3:00 PM |
| Customer Loading: | 7:00 AM – 4:30 PM |
| Equipment/Facility Shut-down: | 4:30 PM – 5:30 PM |

* Some variations to the schedule outlined above may occur due to unseasonable weather conditions extending or abbreviating asphalt production, or due to special project demands requiring extended asphalt production or stone sales during the week or on Saturday.

3.8 Reclamation

The removal of the material from the isthmus will eliminate the separation between the two existing quarry basins resulting in the creation of one large basin. All of the land area in the project site that has been mined or otherwise physically disturbed by mining activities (e.g., haul roads, stockpiles, storage, and processing areas, etc.) will be reclaimed in accordance with a NYSDEC approved Reclamation Plan complying with basic reclamation requirements set forth in 6 NYCRR Part 422.3 (Reclamation Plans, Specific Provisions). The requirements for reclamation necessitate the conditioning of the affected land to make it suitable for a productive use. This includes the following elements: grading and slope treatment; disposal of spoil; drainage and water control features; and re-vegetation.

Additionally, provisions for pollution prevention, safeguarding the environment, preservation of the taxable value of the property, and protection of public property, health, safety and general welfare are required to meet the reclamation standards.

The Mined Land Reclamation Plan that is a component of the subject permit modification application and is included in Appendix A calls for the conversion of the quarry to a single approximately 169-acre lake. The land surrounding the lake is to be restored through grading, stabilization and re-vegetation, making it suitable for development. Potential

post-reclamation uses of the site include industrial, commercial, residential or recreational use, or a mixture of these uses. The actual use of the reclaimed land surrounding the lake will be at BCS's discretion, reasonably a function of the real-estate market and economic conditions at the time of its availability for development and will be subject to local land-use laws and appropriate approvals.

## 4.0 ENVIRONMENTAL SETTING

### 4.1 Natural Resources

#### 4.1.1 Geology

##### 4.1.1.1 Regional Geologic Setting

The project site is in Erie County, which is in western New York. The geology of this region is characterized as being in two distinct physiographic provinces. The Erie-Ontario Plain occupies the northern part of the region and the Appalachian Plateau occupies the southern part of the region. The project site is in the Erie-Ontario Plain, which is characterized by a series of low relief plains separated by higher relief escarpments that are generally parallel to the shoreline of Lakes Erie and Ontario.

The topography of the Erie-Ontario Plain province is strongly influenced by bedrock geology and relatively recent geological events, which occurred during and after the Pleistocene Epoch (approximately 12,000 years ago). The natural topography of the Erie-Ontario Plain province is a result of pre-glacial erosion followed by a series of glacial advances and retreats, and most significantly, the existence of glacial lakes that formerly submerged the province.

###### 4.1.1.1.1 Surficial Geology

####### 4.1.1.1.1.1 Soils

The soils in this portion of Erie County were formed from the available overburden deposits of lacustrine silt and clay, and glacial till. Soils that have relatively high silt and clay content are called loams, and are the primary soils in the vicinity of the project site. These soils are present in three general categories, which include silt loams, silty clay loams and fine sandy loams. Because of their high silt and clay content, water movement through the silt loams and silty clay loams is slow, and as a result, these soils tend to support seasonal high water tables during the winter and spring. The fine sandy loams are better drained near the surface, but support perched water tables atop clay-rich zones in the subsoil.

#### 4.1.1.1.1.2 Overburden

As a result of the glacial advances and retreats and the former glacial lakes that submerged this portion of the region during the Pleistocene Epoch, sheets of glacial till and lacustrine deposits were deposited on the lake plain. These deposits consist primarily of silt and clay, and are prevalent throughout the Erie-Ontario Plain province. Post-glacial erosion has resulted in a network of streams and creeks, which are incised into the lake plain and meander to the north and west, and eventually discharge into Lakes Erie and Ontario.

### 4.1.1.1.2 Bedrock Geology

#### 4.1.1.1.2.1 Stratigraphy

Middle Devonian and Upper Silurian Age sedimentary strata that were deposited between 360 and 408 million years ago dominate the bedrock geology in the vicinity of the project site. These strata consist of organic shales, limestones and dolostones that were deposited in a shallow inland sea. This sea became progressively deeper with time, and, as the water depth increased, the depositional environment changed. The type of sedimentary strata that were deposited in the vicinity of the project site reflects these changes in the environment.

The regional stratigraphy of the uppermost bedrock strata is discussed below, in descending order from the youngest strata downward. Certainly, older and deeper bedrock strata are present, but these units are significantly deeper than mined areas of the project site and are therefore not discussed herein.

MARCELLUS SHALE – The Marcellus Shale in New York is a series of black shales that lie immediately above the Onondaga Limestone. The Marcellus Shale is a dense, black shale that has a high bituminous content, is slaty, and contains a few thin calcareous layers of spheroidal concretions. Both the lower and upper contacts of the Marcellus Shale are absent in Erie County, having been eroded away. Therefore, the thickness of the formation can only be estimated from well records.

ONONDAGA LIMESTONE - The Onondaga Limestone, which is the resource to be mined from the project site, is of Middle Devonian age. In Erie County, the Onondaga is reported to unconformably overlie the Late Silurian Akron Dolomite. It has also been noted that the Middle Devonian Bois Blanc Formation, which looks similar to the Onondaga, as well as thin sections of the Oriskany Sandstone, may be present immediately above the Silurian-Devonian unconformity in some locations.

The Onondaga is a massive, flat to nearly flat-lying complex of cherty and argillaceous limestones, deposited in a relatively deep, open marine environment within the Erie Ontario Plain. The Onondaga outcrop is situated in an east-west trending belt that extends from Lake Erie to south of Albany, and on to Port Jervis, New York. In Erie County, the belt is approximately four miles wide and 23 miles long and extends from Lake Erie in the west to the Erie-Genesee County line in the east. The northern edge of the Onondaga is represented by a 25 to 50-foot escarpment that separates the low-lying lake plains to the north from the higher foothills of the Allegheny Plateau to the south. The formation is up to 140 feet thick in the southern portion of its outcrop belt, but thins to approximately 25 to 100 feet near the escarpment edge.

In western New York, the Onondaga consists of five members. In descending order, they are the:

- Seneca Member: a fine to coarsely crystalline limestone containing corals, brachiopods and bryozoans that also contains a bentonite clay bed at its base;
- Moorehouse Member: a fine to coarsely crystalline limestone containing corals, brachiopods and bryozoans;
- Nedrow Member: a fine crystalline limestone with alternating chert beds;
- Clarence Member: a rough weathering, poorly fossiliferous limestone containing abundant chert; and
- Edgecliff Member: a coarse-textured, crinoidal limestone with abundant corals.

The Onondaga Limestone was deposited in a shallow sea that deepened over time. This setting is reflected by the nature of the sediments deposited. The oldest member of the Onondaga, the Edgecliff Limestone, appears to have been deposited in clear, high-energy water (waves common) containing coral reefs. The overlying, younger members of the Onondaga were deposited further offshore, in deeper water. The depositional environment for the Clarence Chert was moderately deep, clear water. The Nedrow, overlying these beds, as well as the Moorehouse and Seneca Members, are cherty limestones deposited in quiet, deeper, and sometimes murky waters.

AKRON DOLOSTONE – The Akron Dolostone is an eight-foot thick greenish-gray to light buff, mottled, vuggy dolostone that is preserved in some places between the major regional unconformity between the Upper Silurian and Middle Devonian strata in western New York.

BERTIE DOLOSTONE – The Bertie Dolostone overlies the Camillus Shale and is comprised of dolomitic limestone that contains shaly dolostone in its lower sections. The Bertie dolostone is between 50 and 60 feet thick, and is comprised of four members which are, in descending order:

- Williamsville Member: A gray dolostone;
- Scajaquada Member: A dark gray shale;
- Falkirk Member: A massive brown dolostone; and
- Oatka Member: A thick shaly dolostone.

CAMILLUS SHALE – The Camillus Shale comprises the majority of the Salina Group in northern Erie County. This unit is about 400 feet thick, and lies in an east-west belt from six to eight miles wide. The Camillus Shale ranges from thinly-bedded shale to massively bedded mudstones, and the stone color varies from gray to brownish-gray, with red and green staining. The Erie County occurrences contain anhydrite and gypsum beds that can be up to five feet thick, but can also occur as thin lenses and veins. Limestone and dolomite are also interbedded with the Camillus Shale. The Camillus dips to the south, and contains broad east-west trending folds.

Because of the high solubility of the gypsum in this stone, the water-bearing properties of the Camillus are directly related to the dissolution of gypsum beds that formed large solution openings. Therefore, although the shale has a low permeability, the most productive bedrock aquifer in the area is present in the Camillus Shale. Industrial wells in the Buffalo area produce from 300 to 1,200 gallons per minute of water from the Camillus Shale.

4.1.1.1.2.2 Structural Geology

From a regional perspective, the strata in the vicinity of the project site are homoclinal and exhibit only subtle post-depositional structural features. These features include:

FOLDS – The bedrock in Erie County dips slightly to the south, at approximately 40 feet per mile. Small folds occur in frequencies that reach 1,000's of feet across, but have amplitudes only tens of feet high. These low-magnitude folds are not readily apparent on regional geologic maps; however, they can be seen on more detailed structural contour maps.

JOINTS – Joints and joint systems are known to exist in all of the bedrock units in western New York. In eastern Erie County, vertical joints were found in the Onondaga Limestone at a horizontal spacing of 5 to 18 feet. These structures, when present in the Onondaga, are frequently enlarged by dissolution to depths of from 10 to 25 feet below ground surface. These joints trend N 75 E, N 40 W, and N 5 E. For the most part, they extend laterally for tens of feet, but have been measured in some cases extending for several miles.

FAULTS – Major faults are not characteristic of the bedrock geology of this area. The only known fault of significance is the Clarendon Linden Fault. This north-south trending fault system extends from Lake Ontario to Allegheny County and

is approximately thirty miles east of the project site. This fault displays both strike-slip and dip-slip motion, and is expressed as an offset on the Onondaga Escarpment.

4.1.1.1.3 Site Geologic Setting

Although quarrying has extensively modified the project site's topography, the area in the vicinity of the project site is generally flat with a gentle downward slope to the west. The project site has an elevation of approximately 600 feet above mean sea level (AMSL) in undisturbed areas and an elevation of approximately 450 feet AMSL on the quarry floor. A USGS 7.5 Minute Topographic Map is included as Figure 1.

4.1.1.1.4 Soil

The General Soil Type map included in the 1978 Soil Survey of Erie County, New York identifies the soil type in the vicinity of the project site as Urban Land, which is described as nearly level urbanized areas and areas of well drained to poorly drained soils and disturbed areas. The soils overlying the isthmus were identified as being included within a quarry, and as such, have been disturbed, removed or buried as a result of historic quarry activities. The soil survey identifies several soil types on the perimeter of the isthmus. Descriptions of these soil units are provided below, while Figure 5 shows their distribution on the project site.

Cosad loamy fine sand (Cv) - The Cosad soils consist of deep, somewhat poorly drained soils in nearly flat areas of glacial lake plains. These soils formed in sandy sediments and in the underlying clayey lake-laid deposits. Slopes range from 0 to 3 percent.

Odessa silt loam (Od) - The Odessa soils consist of deep, nearly level, somewhat poorly drained soils on the lowland plain in the northern part of the county. The soils formed in red glacial lake sediments high in clay and silt content. Slopes range from 0 to 3 percent but are dominantly 0 to 2 percent.

Udorthents, smoothed (Uc) - The Udorthents consist of excessively drained to moderately well drained soils near industrial sites, construction sites and urban developments mostly in the City of Buffalo and adjacent suburbs. These soils are in variable manmade cut-and-fill areas and have very little or no profile development.

4.1.1.1.5 Overburden

According to the Surficial Geologic Map of New York State – Niagara Sheet (1988), overburden occurring in the vicinity of the project site consists of lacustrine silt and clay deposits. The presence of these deposits was confirmed

by soil samples collected during the drilling of four test borings at locations to the east and south of the isthmus in November 1997 as well as by observations of the overburden profile exposed along the perimeter of the existing quarry. The locations of these test borings are depicted in Figure 6. The results of these investigations indicated that the thickness of the overburden deposits ranges from approximately 10 to 25 feet in the vicinity of the project site; however, the isthmus area was generally stripped of overburden in connection with historic quarrying activities at the project site. Two areas on the isthmus were filled to provide subgrade for workshops and plant facilities and/or to level mined areas. A third location where extra asphalt and road millings have been placed also exists.

4.1.1.1.6 Bedrock

The uppermost bedrock formations in the vicinity of the project site consist of the Marcellus Shale, Onondaga Limestone, Akron Dolostone, Bertie Dolostone and the Camillus Shale formations. The Marcellus Shale and Onondaga Limestone are Middle Devonian age strata that unconformably overlie the older upper Silurian Age Akron and Bertie Dolostones of the Salina Group. The top of the Akron Dolostone demarcates a major regional unconformity between Upper Silurian and Middle Devonian strata in western New York.

Bedrock comprising the isthmus is composed of the Onondaga Limestone, which has been quarried at the project site for over sixty years. The Onondaga Limestone is an important natural resource that has been extensively mined at the project site and at other sites in western New York. Accordingly, a good deal of information regarding this formation is available. The limestone at the project site is a fine to very fine-grained crystalline limestone that varies to a limestone with fine, sand-sized fossil fragments and a limestone that contains some to much chert that is very hard and dense (see Section 4.1.3.2.2 regarding the silica content of the limestone). The color of the stone varies from light to dark gray, while bedding varies from thin to massive. The amount of chert increases with depth, going from nodules and lenses to seams and lenticular beds. The chert is hard, dense, brittle, and vitreous to resinous, with a gray to black color. Color features also noted include mottling and nodules with concentric color bands.

The thickness of Onondaga Limestone averages approximately 150 to 160 feet and the formation has been subdivided into five distinct members. These members include the Seneca, Moorehouse, Nedrow, Clarence and Edgecliff Members, in descending order. The active faces of the quarry being mined are the Seneca, Moorehouse, and Nedrow Members and the top of the Clarence Member. Although the Marcellus Shale overlies the Onondaga Limestone in most areas, the Marcellus Shale has been eroded away and is not present at the project site.

The aforementioned test borings were also advanced into the bedrock to characterize bedrock conditions at the project site. Each of the four test borings was advanced through bedrock to near the base of the Onondaga Formation. A continuous bedrock core sample was collected from test boring MW-4, which is located just south of the isthmus. Test borings MW-1, MW-2 and MW-3 were advanced through bedrock using air rotary methods that did not yield any bedrock samples. All of the test borings were completed as open-hole bedrock wells.

Analysis of the core samples obtained from MW-4 provided the following information:

- The rock quality designation (RQD) of the core samples recovered, which is a measure of the structural integrity of the stone, indicates the presence of two zones of moderately fractured bedrock occurring at 30 to 40 feet and 80 to 90 feet below the ground surface. The integrity of the remaining sample intervals ranged from very good to excellent, including the upper-most 15 feet of bedrock.
- Moderately close spaced, slightly weathered horizontal fractures were noted throughout the depth of the core sample, frequently occurring along styolites.
- Zones of very closely to closely spaced horizontal fractures were noted at depth intervals below the ground surface of 25.2 to 26.8 feet, 38.5 to 43 feet, 48.2 to 49.4 feet, 86.3 to 88.4 feet, 96.8 to 97.8 feet, and 151 to 151.7 feet.
- No high angle or vertical fractures were noted in the core sample.

Conditions noted during the drilling of the remaining three test borings included:

- Groundwater was encountered at depths ranging from 18 feet (MW-3) to 140 feet (MW-2) below the ground surface; and
- Several one-foot thick seams of less resistant drilling were encountered in each corehole, and are likely indicative of zones of closely spaced horizontal fractures.

4.1.1.1.7 Structural Geology

Localized faults or folds have not been encountered on any working face throughout the history of mining at the quarry.

A review of the Preliminary Brittle Structures Map of New York, Niagara – Finger Lakes Sheet (1977) indicates that no faults are located on or near the project site. This is consistent with the findings of the Geology Report prepared by George L. Marshall Engineering Geologists entitled "Buffalo Crushed Stone, Inc. Cheektowaga (Como Park Blvd.) Quarry Stone Reserves East of Indian Road

Geology Report, November 8, 1995, which was appended to the Application for Zoning Reclassification submitted to the Town of Cheektowaga in July 1997 and is provided in Appendix B of this DEIS. Relevant findings of the referenced Marshall report are:

- Review of a New York State Geological Survey map showing the location of faults across the state indicated the absence of any faults on or adjacent to the project site;
- Communications with Dr. Robert Jacobi of the Geology Department of SUNYAB, who is an expert in the area of faults in western New York, indicated that to his knowledge no records of faulting in the general area of the quarry exist; and
- Communications with a bedrock structure expert from the New York State Geological Survey indicated that no evidence of faulting in the vicinity of the quarry was found as a result of the review of the Survey's files, reports, maps and aerial photographs.

Fracture traces are surface expressions of joints, zones of joint concentration or faults. A fracture-trace analysis of the quarry area was undertaken in 1998 by Clough Harbour & Associates LLP. The analysis, which used historic aerial photography, was completed to identify linear features that are potentially indicative of faults or other bedrock structures. The 1927 vintage aerial photography, which was taken prior to the initiation of quarrying at the project site, depicted linear fractures or joints in bedrock exposed within the channel of Cayuga Creek. These fractures or joints were oriented approximately 26 degrees west of north. No surface expression of these features was visible beyond the creek channel to indicate that they were laterally extensive.

The bedrock joints visible in the 1927 photograph were also visible in photographs from subsequent years. Staubitz and Miller reported vertical joints in the Onondaga Limestone in eastern Erie County spaced at 5 to 18 feet apart, and extending from 10 to 25 feet below the ground surface. The spacing of the joints occurring adjacent to the east side of the project site was determined to be 1 to 10 feet, with the majority being of hairline width. Some of these joints have been widened within several feet of the surface due to stream erosion, while at some locations the upper two feet of bedrock between parallel joints has been eroded creating the appearance of widened joints. The depth of joints that were sufficiently wide to permit measurement ranged from zero to two feet. (Staubitz, Ward W. and Miller, Todd S., Geology and Hydrology of the Onondaga Aquifer in Eastern Erie County, New York, with Emphasis on Ground Water Level Declines Since 1982 (1987). Available in the Buffalo and Erie County Public Central Library, Call Number I19.42/4: 86-4317).

### 4.1.2 Water Resources

#### 4.1.2.1 Surface Water

##### 4.1.2.1.1 Regional and Local Drainage Basins

The project site is located in the Erie-Niagara River Drainage Basin. The primary streams in this basin flow westerly or northwesterly into Lake Erie or the Niagara River. At the northern end of Erie County is Tonawanda Creek, which flows westerly into the Niagara River. At the southern end of Erie County is Cattaraugus Creek, which also flows into Lake Erie in a westerly direction. Between the two, are streams that generally flow northwesterly from the Appalachian Plateau that forms the southern half of the county, then westerly across the Erie-Ontario Plain.

The project site is located within the drainage area of Cayuga Creek, which is located approximately 1,000 feet to the east of the isthmus, as shown on Figure 1. Cayuga Creek flows to the southwest to a confluence with Buffalo Creek. These creeks join to form the Buffalo River, which flows westerly to Lake Erie. Cayuga Creek is a meandering stream with an established floodplain. The elevation of the streambed nearest the isthmus area is 613 to 616 feet AMSL, approximately 105 feet above the floor of the existing quarry. As shown in Figure 1, the creek flows to the west then makes a 90-degree bend to the south. To the east of the bend, the creek is slow moving with a u-shaped channel and a silty bottom. South of the bend, the creek flows at a greater velocity directly across the top of the limestone bedrock. In the latter reach, the creek bottom is flat and, lacking any distinct channel within its banks, flow across it is generally uniform. This transition from slow moving flow over a silty bottom to rapid flow directly across bedrock is attributed to a steeper gradient downstream of the bend.

Data from a United States Geological Survey (USGS) stream gauging station (USGS Station No. 04215000), located approximately four miles upstream of the project site, indicates that the mean daily discharge for a 10-year period (1993 to 2002) is 62,432 gallons per minute (Source: http://waterdata.usgs.gov). It was not feasible to determine the discharge of the creek upstream and downstream of the project site using staff gauges because of the morphology of the streambed and the large variability in flow. Staff gauges, which generally consist of graduated posts for measuring the stage of streams, are typically placed in the streambed near the stream bank such that the water level can be read even during the lowest flow. During periods of low flow, however, flow within Cayuga Creek south of the bend is characterized as sheet flow across the flat bedrock surface that is not confined to any distinct channel between the creek banks and may occur tens of feet from the nearest bank. As such, a staff gauge placed near the stream bank in this reach of the creek would not enable measurements during significant portions of the year. The placement of a staff gauge in the

center of the creek channel is not feasible because rafted debris and ice flows would undoubtedly damage or remove the gauge during storm events and winter months.

Surface water bodies do not occur on the isthmus, which has been stripped of vegetation and overburden for the construction and operation of the quarrying facilities. Precipitation that falls on the isthmus flows as sheet-flow over the surface of the isthmus and collects in the quarry basins and / or infiltrates into bedrock. Runoff that collects in the quarry basins is pumped to the surface and discharged to a county-owned drainage ditch that flows into Cayuga Creek to the south. The discharge from the quarry is permitted by a State Pollutant Discharge Elimination System (SPDES) Permit issued by the NYSDEC.

#### 4.1.2.1.2 Surface Water Quality

Cayuga Creek is a Class C stream, designated under 6 NYCRR 710 and 835. Class C waters are considered suitable for fishing and other secondary contact recreational uses, but not as a source of drinking water or for primary contact recreation. Surface water quality data generated during the monitoring of the adjacent Land Reclamation Landfill and the Schultz Landfill include analytical results from samples collected in 2000 and 2001 from Cayuga Creek to the east, or upstream, of the project site. The data are provided in Appendix C and were obtained pursuant to a FOIL request to the New York State Department of Health. The data indicate that the landfills have influenced water quality in Cayuga Creek, as discussed below.

The landfill monitoring results indicate that the concentrations of aluminum, cyanide, iron, lead and total dissolved solids detected in the creek exceed Class C Standards, but that no synthetic organic contaminants have been detected at this location. In addition, concentrations of many analytes (substances or chemical constituents that are tested for during analysis) in the creek samples collected immediately downstream of the landfills (sample location SP-6) were significantly higher than in the samples collected upstream of the landfills (sample location SP-6). These analytes included arsenic, cyanide, phenols, total dissolved solids, and chemical oxygen demand (COD).

Surface water samples collected from a drainage ditch at the Schultz Landfill that discharges into Cayuga Creek (sample location SW-2) contained many analytes at concentrations significantly above Class C Standards and/or concentrations detected at the upstream Cayuga Creek location. These analytes included aluminum, ammonia, chloride, lead, total organic carbon, and COD. Additionally, the Oxidation Reduction Potential (Eh) of the water in the drainage ditch was also higher than in the upstream samples.

As required by BCS's SPDES Permit, samples are collected from surface water discharged at the quarry. The database of analytical results includes information from approximately 90 sampling events that occurred between April 1992 and May 2005. Samples were collected sporadically during the first five years of the program and approximately monthly during the next nine years. The parameters monitored during each sampling event included flow rates, pH, total suspended solids (TSS), total sulfur, dissolved oxygen, sulfide, and turbidity. The SPDES Permit includes limits for pH and TSS. The results indicate that pH was always within the limits, while TSS concentrations exceeded the limits a total of six times during the 13-year monitoring period. The data are provided in Appendix D.

#### 4.1.2.2 Groundwater

The following subsections describe existing groundwater conditions in terms of its occurrence and use, movement and quality. This information is presented on the regional, local and site specific levels for the purpose of developing a thorough review of existing groundwater conditions, and also serves as the basis for analyzing potential groundwater impacts associated with the proposed action.

##### 4.1.2.2.1 Occurrence and Use

Groundwater occurs in overburden and bedrock in northwestern Erie County. However, the predominantly fine-grained overburden in the vicinity of the project site generally has low permeability, which often results in a seasonal high water table and does not transmit large quantities of water. This condition, as well as the existence of a well-developed public water supply network in the area that taps the freshwater resources of Lake Erie and the Niagara River, has translated into a general absence of water supply wells completed in overburden. Conversely, productive water-bearing zones in bedrock underlying this region are common and have historically been used by local industries as a source of process water. The use of bedrock groundwater as a source of drinking water in northwestern Erie County, however, is not widespread as the entire area is serviced by public water supply.

Groundwater occurring in bedrock in northwestern Erie County is primarily found in bedding planes, vertical joints and fractures. Because the bedrock units in this area are composed of minerals that are typically soluble in water, these secondary porosity features are commonly enlarged by dissolution. This is true of the Camillus Shale, which contains abundant and highly soluble gypsum beds, the dissolution of which can result in significant groundwater productivity along horizontal bedding planes. Therefore, although the shale has a low permeability, the most productive bedrock aquifer in the area is present in the Camillus Shale. Industrial wells in the Buffalo area produce from 300 to 1,200 gallons per minute of water from the Camillus Shale. Horizontal bedding planes and vertical fractures and joints that have been widened by dissolution are also the primary

sources of groundwater in the Bertie and Akron Dolostones and the Onondaga Limestone.

The aquifer that occurs within the Onondaga Limestone extends from Buffalo to Albany in a belt that trends east-west and is several miles wide. This limestone aquifer directly underlies the overburden in the vicinity of the project site, but is not classified as a primary or sole source aquifer in the vicinity of the project site. The reported yield of 42 wells in northeastern Erie County that tap the Onondaga aquifer ranged from three to 100 gallons per minute (Staubitz and Miller 1987). Horizontal bedding planes widened by dissolution form the most productive water bearing-zones in the Onondaga in the vicinity of the project site. Prominent water-bearing bedding planes have been observed at the top of the Clarence Member and at the base of the Onondaga. Vertical joints are generally less extensive than bedding planes in the vicinity of the project site and are not significant water-bearing openings, except where widening from dissolution has occurred. The widest openings in vertical joints typically occur in the upper five to 15 feet of the Onondaga, as a result of more rapid dissolution. Vertical joints become narrower, less numerous and less continuous with depth.

4.1.2.2.2 Groundwater Flow

4.1.2.2.2.1 Overview

Groundwater in both overburden and bedrock moves from areas of higher head (recharge areas) to areas of lower head (discharge areas). Recharge to the overburden in the vicinity of the project site primarily occurs from precipitation that infiltrates downward to the water table. Due to the generally low infiltration capacity of the fine-grained overburden in the vicinity of the project site, seasonally saturated wetlands formed by ponded runoff may also serve as a source of recharge to overburden. In the vicinity of the project site, overburden groundwater discharges to Cayuga Creek and tributaries thereof, permanent wetlands, the existing quarry, and the underlying limestone bedrock. The bedrock aquifer is recharged by precipitation and surface water that directly infiltrate exposed joints and fractures on the top of the limestone, as well as by downward seepage through the overburden. Groundwater in the bedrock moves through a network of joints and bedding planes to discharge areas. Regionally, bedrock groundwater flows from east to west along the slope of the Erie-Niagara Basin, toward the major discharge areas represented by Lake Erie and the Niagara River.

4.1.2.2.2.2 Local Conditions

Extensive hydrogeologic investigations of the landfill sites to the east of the project site have generated substantial data that aid in understanding groundwater flow in the vicinity of the project site. The results of these

investigations indicate that three major flow systems exist in the vicinity of the landfills: an overburden zone, an intermediate overburden/bedrock flow system and a deeper bedrock flow system.

At the landfill sites, the overburden zone occurs within the relatively low permeability overburden, while the intermediate flow system consists of a water-bearing zone in the highly transmissive fractured bedrock zone that occurs within the top two to three feet of bedrock. The fractured bedrock zone is underlain by more competent bedrock that has less secondary porosity and serves as an aquitard, meaning that it inhibits downward flow into deeper bedrock zones. In areas where the fractured bedrock zone is overlain by more permeable overburden deposits (e.g., fluvial sediments associated with current or past channels of Cayuga Creek), the bedrock and overburden appear to be hydraulically connected. Former stream channel deposits that underlie the landfill sites were found to strongly influence natural groundwater flow patterns in the shallow water-bearing zone. These deposits are associated with a meander in Cayuga Creek that previously traversed the landfill sites prior to their development, and was subsequently cut-off when the creek eroded a more direct channel. Because of their relatively higher permeability, these deposits serve as a preferential pathway to the discharge zone represented by Cayuga Creek. As a result, natural flow in the overburden in the vicinity of the landfill is generally to the south. Groundwater in the fractured bedrock water-bearing zone in the vicinity of the landfill was also determined to naturally flow predominantly to the south, following the slope of the top of bedrock. (Source: Various AFI Environmental, BFI, Sear Brown, E&E and Engineering-Science reports. See references.) The quarry is located to the west of the landfill. Therefore, natural groundwater flow from the landfill is not toward the quarry.

According to the NYSDEC July 2001 Fact Sheet, which is included in Appendix E, since 1999, a groundwater extraction system has been in operation at the Schultz landfill. The system consists of a series of leachate recovery wells that were installed along the western and southern margins of the landfill to capture contaminated groundwater emanating from this unlined facility. Groundwater extracted by these wells is conveyed to the sanitary sewer system for off-site treatment by the Buffalo Sewer Authority. This system of extraction wells was designed to induce hydraulic control along the down-gradient perimeter of the landfill for the purpose of: (1) preventing the off-site migration of landfill-derived contaminants; and (2) properly treating contaminated groundwater emanating from the landfill. As a result, this system has altered groundwater flow patterns in the vicinity of the landfill and has effectively eliminated the potential for groundwater migration from the landfill to the quarry.

4.1.2.2.2.3 BSC Quarry Site

The shallow and intermediate groundwater flow systems identified at the nearby landfill site are not present on the BCS isthmus, as the overburden has been removed for the construction and operation of the quarrying facilities, and the exposed top of the bedrock is generally competent with only limited fracturing. Therefore, precipitation that falls on the isthmus flows as sheet-flow over the surface of the isthmus and collects in either quarry basin. There does not appear to be any substantial infiltration of precipitation into the bedrock surface of the isthmus. The lack of fracturing at the top of the bedrock of the isthmus is consistent with observations made during the drilling and geophysical logging of MW-4, as well as those made at the exposed top of bedrock around the perimeter of the existing quarry. Evidence of this lack of fracturing can be seen in the southeastern corner of the existing quarry where surface water runoff from the exposed top of bedrock surface collected behind the perimeter berm constructed in this area and did not infiltrate the bedrock. This condition necessitated the construction of a trench in the bedrock surface to drain this area into the existing quarry. This lack of fracturing in the top of the bedrock at the isthmus is different than observations made at the nearby landfills, at which a highly fractured zone is present in the top two to three feet of the landfills. The occurrence of the highly fractured zone on the landfill sites could be a function of accelerated weathering in the former Cayuga Creek channel that previously traversed the landfill site and/or increased weathering and dissolution of the upper bedrock.

The deeper bedrock flow system was characterized at the landfill sites as a series of fracture or bedding plane flow zones separated by bedrock aquitard zones. Groundwater flow velocities in the deeper bedrock flow system were noted to be relatively low, reflecting the low hydraulic conductivity of this unit. Furthermore, the horizontal conductivity of the bedrock aquifer was determined to be much greater than the vertical conductivity.

To identify potential water-bearing fractures in the bedrock surrounding the quarry, geophysical logging was performed in December 1997. The results of the geophysical logging indicated that the bedrock is not highly fractured. Although some fractures were detected by the caliper logs in the bedrock, some of the fractures were not considered productive because they occur above the static groundwater elevation. The remaining fractures identified within the saturated zone do not appear to transmit significant quantities of groundwater, as the volume of groundwater emanating from seeps on the quarry walls is very limited. These seeps were observed in only a few locations and generally do not produce water volumes sufficient to cause ponding at the base of the quarry walls.

In the vicinity of the project site, recharge to the bedrock aquifer occurs from the downward migration of groundwater in the overlying overburden and from direct

surface water infiltration of vertical joints exposed in the streambed of Cayuga Creek. Water levels measured in 1998 in two monitoring wells located adjacent to the quarry indicate that the bedrock profile is only partially saturated, with groundwater absent in bedrock in the upper 133 feet at MW-1 and 43 feet at MW-4. Although an obstruction was present in MW-1 during a recent round of water level measurements, the recent water levels in MW-4 and two other nearby monitoring wells were very similar to those measured in the wells in 1998. A comparison of water levels in MW-1 and MW-4 with the base level of Cayuga Creek in the reach that flows directly over the top of bedrock and contains the exposed vertical joints indicates that the stream elevation is higher. Therefore, this reach of the creek would be expected to be a source of recharge to the bedrock aquifer if the vertical joints connect with water-bearing zones within the aquifer. The fact that water levels in bedrock surrounding the quarry are below the stream elevation, coupled with the fact that no significant groundwater discharge zones are visible on the faces of the existing quarry, indicates that the creek is not hydraulically connected to the quarry.

The groundwater elevation in MW-1 is equal to the elevation of the bottom of the existing quarry, while the elevation in MW-4, which is less than 200 feet from the nearest quarry wall, is more than 25 feet above the quarry floor. The rate of groundwater flow is a function of the hydraulic conductivity and the gradient. Hydraulic conductivity is a measure of the ability of a material to transmit water, and is a function of porosity and the degree of fracturing. The hydraulic gradient is a measure of the head difference between two points. Higher hydraulic conductivities and/or higher gradients translate into more rapid rates of groundwater flow. Because the groundwater levels in MW-4 are significantly above the elevation of the existing quarry floor at its closest point, it can be concluded that the bedrock does not transmit groundwater at rapid rates despite relatively steep gradients. This result may be the outcome of poorly conductive bedrock and/or the discontinuous nature and lack of hydraulic connection of fractures in the bedrock with the quarry.

The boring, well and groundwater data are included as Appendix F.

The frequency and rate of pumping at the quarry vary widely, with extended periods of time when no pumping is required to periods of high precipitation during which pumping rates up to 1,200 gallons per minute are necessary. The water levels measured in the monitoring wells indicate that the pumping of groundwater and surface water runoff that collects in the sumps at the base of the quarry has depressed groundwater levels in the immediate vicinity of the quarry. Therefore, the existing quarry serves as a discharge point for bedrock groundwater. However, as described above, the volume of groundwater discharging to the quarry is minimal based on the limited number of seeps observed on the quarry walls and the limited volume discharged by each seep. With the exception of a small area of seeps located in the southeastern corner of

the existing quarry, faces of the existing quarry (including the eastern and western faces) are worked dry. This indicates that little or no recharge to the portions of the bedrock aquifer that are in communication with the quarry is occurring.

In the bedrock of the isthmus, it is unlikely that significant quantities of groundwater are present based on the limited amount of water in the bedrock at the project site as well as due to the flow regime in the vicinity of the isthmus. A lack of seeps on the exposed surfaces of the isthmus indicates the highly probable lack of groundwater in the isthmus. Groundwater generally migrates in the path of the steepest gradient. For groundwater in the immediate vicinity of the quarry, the quarry basins act as the lowest points in the groundwater flow system, or discharge points with the steepest gradients. In other words, the previously quarried areas act as a sink for groundwater in the bedrock. Therefore, groundwater in the vicinity of the quarry will preferentially discharge to the quarry rather than continue to flow horizontally into the bedrock that comprises the isthmus. In addition, the volume of precipitation that infiltrates into the isthmus area is very limited due to the lack of fractures at the top of the exposed bedrock.

#### 4.1.2.2.3 Groundwater Quality

Regionally, groundwater quality in the bedrock units underlying the project site generally reflects the composition of the rock in which it occurs. The quality of the groundwater in the three bedrock formations immediately underlying the project site is discussed below in descending order.

- Groundwater occurring in the Onondaga Limestone is generally lower in total dissolved solids and therefore of higher quality than that found in the underlying formations. However, the concentrations of calcium and magnesium in groundwater from the Onondaga are relatively high, and result in this water being characterized as hard. Water quality in the Onondaga aquifer deteriorates with depth, which may be reflective of mixing with poorer quality groundwater in the underlying formations.
- The quality of water from the Akron and Bertie Dolomites, which lie between the Onondaga Limestone and Camillus Shale, is variable. The quality of water within these dolomites is likely controlled by the hydrogeologic character of the groundwater system and by the origin of the water. Water in the upper part of the dolomite is derived from leakage from the overlying limestone. Water in the lower part of the dolomite may be derived from up-welling from the underlying Camillus shale.
- Groundwater in the Camillus Shale has high concentrations of total dissolved solids, including dissolved calcium and sulfate, which are derived from the dissolution of the gypsum beds within the shale. This

water also tends to have a strong hydrogen sulfide odor and appreciable concentrations of dissolved iron, and manganese. The presence of these constituents, which results from reducing conditions within the shale, makes water from the Camillus generally objectionable for domestic use.

Prior to modifications to the existing quarry dewatering system, hydrogen sulfide odors were noted in the water pumped from the sumps in the quarry. The relatively widespread presence of gypsum in local bedrock formations and the dissolution of this mineral have translated into the common occurrence of hydrogen sulfide in western New York groundwater. As previously noted, groundwater in the Camillus shale often has a strong hydrogen sulfide odor. Consequently, the presence of hydrogen sulfide odors in the quarry discharge prompted speculation that high sulfide groundwater was discharging or being drawn upward into the quarry from underlying gypsum-bearing bedrock. A study of this condition completed by the State University of New York at Buffalo (SUNYAB) Center for Integrated Waste Management in 1998 resulted in the following conclusions:

- Water in the quarry sumps, which is comprised of a mixture of groundwater and surface water runoff, contains almost no measurable sulfide and is relatively free of turbidity.
- The agitation of sulfide-bearing sediments present near the former pump intakes during active pumping introduced sulfide precipitates into the discharge water, thereby generating the hydrogen sulfide odors.

As a result of these conclusions, the pump intakes were reconfigured and pumping rates were altered to minimize the disturbance and entrainment of the sulfide-bearing sediments. Additionally, a water treatment system designed to address hydrogen sulfide in the quarry sumps was installed at the quarry in 2001. Details concerning the design and effectiveness of this system are discussed in Section 4.1.3.2.2.4, which pertains to air quality concerns relating to hydrogen sulfide gas. The SUNYAB study is included within Appendix G as Attachment A.

Extensive hydrogeologic investigations of the nearby landfills have generated substantial geochemical data for groundwater occurring in both overburden and bedrock beneath these sites. These data indicate that the landfills, as well as other sources situated up-gradient of the landfills (e.g., the NYSDOT facility) have introduced inorganic and synthetic organic contaminants in the overburden and bedrock groundwater. (Source: Various AFI Environmental, BFI, Sear Brown, E&E and Engineering-Science reports. See references.) No information indicates that the quarrying operations at the BCS site have contributed to this groundwater contamination.

Due to residents' concern that groundwater being discharged from the quarry was potentially contaminated by the nearby landfills, the NYSDEC requested that BCS sample the groundwater on site and have it analyzed for all of the pollutants on the USEPA's priority pollutant list. In September 2000, BCS completed the sampling. No USEPA priority pollutants were found in the sample. A NYSDEC Fact Sheet, issued July 2001 that addresses this sampling event is included in Appendix E.

Groundwater sampling results generated in 2004 and 2005 from samples collected from monitoring wells situated along the western property line of the Schultz Landfill, indicate that numerous inorganic and synthetic organic compounds were detected at elevated concentrations in the groundwater. These wells are part of the monitoring network for the landfill. Inorganic contaminants detected in these wells above Class GA standards include arsenic; barium; boron; chromium; lead; magnesium; manganese; sodium; ammonia; bromide; chloride; and sulfate, while synthetic organic contaminants that exceeded the standards include benzene; ethylbenzene; methylene chloride; toluene; trichloroethene; vinyl chloride; and xylene (Source: Quarterly Groundwater Monitoring Reports for the Schultz Landfill, reviewed and available at NYSDEC Region 9 offices). As discussed in Section 4.1.2.2.2.2, a groundwater extraction system has been in operation at the landfill since 1999 to address this groundwater contamination, and to prevent the migration of impacted groundwater from the landfill site.

The geochemical data from the landfills also indicates that naturally occurring saline groundwater occurs in the bedrock water-bearing zones situated within 50-feet of the top of bedrock.

#### 4.1.2.2.4 ARO Corporation Site

The ARO Corporation site is located at 3695 Broadway, Cheektowaga, which is less than one-half mile north of the project site. ARO was a manufacturer of life-support equipment, cryogenic vessels and breathing regulators. Ingersoll-Rand bought the company in 1990 and continued operations at the site until 1996, the year in which the main building was demolished. In conjunction with that acquisition, an environmental site assessment was performed. The assessment found volatile organic compounds (VOCs) in both soil and groundwater samples. The primary contaminant of concern is trichloroethene (TCE).

In 1994, the NYSDOH collected surface soil samples to evaluate potential exposure to contaminants through direct contact. Results show contaminants were not present at levels of concern. A Record of Decision by the NYSDEC in 1995 called for the removal and treatment of groundwater and for a pilot study of the feasibility of a soil-vacuum extraction (SVE) system to remove contaminants from on-site soils. The groundwater extraction and treatment system and full-

scale SVE system were installed in the late 1990s and continue to be operated at the site.

According to the NYSDEC Environmental Site Remediation database, the operating treatment system at the ARO site is mitigating the migration of contaminated groundwater. Furthermore, the site is categorized as a Class 4 Inactive Hazardous Waste Disposal Site by the NYSDEC, signifying that the site is properly closed and requires continued management. Sites are classified from 1, indicating an imminent danger to public health or the environment, to 5, indicating that a site is properly closed and requires no further action. The database entry for the ARO site in included in Appendix H.

Based upon the ARO site's regulatory status, it is not considered to represent a threat to the environmental integrity of the project site. Furthermore, this conclusion is supported by the absence of VOCs, including TCE, in samples collected from the quarry sump, as discussed in Section 4.1.2.2.3.

### 4.1.3 Air Resources

The technical report presenting the results of the air resources study performed by TVGA to characterize the existing climate and air quality of the project site and surrounding area is presented in Appendix G. The following sections summarize existing climatological, air quality and facility emissions data compiled for the project. Additionally, recent health related studies conducted in the project vicinity are discussed herein.

#### 4.1.3.1 Climate

The climate of Erie County is generally characterized as humid continental, which predominates much of the northeastern United States. Climatic influences are attributed to the geographical position of Erie County and the route of air masses, governed by large-scale patterns of atmospheric circulation. Furthermore, the local weather is greatly influenced by the county's proximity to nearly all storm and frontal systems passing eastward over or near New York State. Seasonally, the winters are cold and long, subjected to frequent precipitation (mostly in the form of snow) and cloudy conditions, whereas summers are dominated by maritime and continental tropical air masses that bring high temperatures and precipitation. Precipitation is uniformly distributed throughout the year. The prominence of Lake Erie contributes a major impact upon the weather of Erie County in terms of producing a significant amount of snow and cloud cover during the winter season. Such conditions are attributed to the warming of cold air as it crosses the unfrozen lake waters, subsequently accumulating moisture and reaching land in an unstable condition. Precipitation in the form of snow is then released as the air currents move inland.

Climate information published by the National Oceanic and Atmospheric Administration (NOAA) from 2000 through 2004 for Buffalo, New York was obtained from the Northeast Regional Climate Center. The data indicate that the annual precipitation ranged from 35 – 42 inches with an average of approximately 39 inches. Yearly average temperatures ranged from 47.0° to 50.1° Fahrenheit (F) with an average of 48.3°F. The yearly average quantity of snowfall, ranged from 92 – 146 inches with an overall average of 115 inches over the five-year data period. The average annual wind speed during this time period ranged from 9.6 –10.5 mph with an overall average of 9.9 mph, while the average resultant wind direction was 230 degrees (south westerly direction). The resultant wind direction is the vector average of the speed and direction and is measured in a clockwise direction from true north. The data is included in Appendix G as Attachment C.

#### 4.1.3.2 Air Quality

##### 4.1.3.2.1 Local Conditions

The NYSDEC Division of Air Resources monitors a number of pollutants through a statewide network, which includes both state-operated and private stations. Pollutants that are monitored include: nitrogen dioxide, sulfur dioxide, carbon monoxide, ozone (photochemical oxidants), total suspended particulates, inhalable particulates ($PM_{10}$), and lead. Data from the monitoring stations is compiled by the NYSDEC in the New York State Air Quality Report - Ambient Air Monitoring System. The 2004 Annual Report contains the historical data from 1994 through 2004. The data from the monitoring stations closest to the quarry were used to provide a description of baseline air quality in the area. The locations of these monitoring stations and the resultant data is summarized in the Air Resources Report included in Appendix G.

The data indicated that, with the exception of ozone, local ambient air quality is within state and federal Ambient Air Quality Standards (AAQS) for the parameters monitored. Erie County is designated as non-attainment for ozone and while the 8-hour, three-year average AAQS was exceeded for 2004, the recorded 8-hour maximum values have decreased from 2002 to 2004. Additionally, Erie County is located within the Northeastern Ozone Transport Region, which requires more stringent thresholds for major source applicability (i.e., 50 tons/yr VOC threshold).

4.1.3.2.2 Site-Specific Conditions

4.1.3.2.2.1 Facility Emissions

Buffalo Crushed Stone currently has air permits for the three asphalt plants and the processing equipment at the site. These permits were issued by the NYSDEC for the operation of air contamination sources resulting from process, exhaust or ventilation system units. The permits are included in Appendix G as Attachment A.

The emissions from the facility are subject to the requirements of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 201. The allowable emissions of the main regulated substances at the quarry, as listed in 6 NYCRR Part 201, include 100 tons per year (tpy) of carbon monoxide (CO) and 100 tpy of particulate matter less than 10 microns in diameter ($PM_{10}$). The NYSDEC determined that the facility has the potential to exceed the limits for CO and $PM_{10}$ set forth in the regulations, and, therefore, special conditions were attached to the permits.

The special conditions require the facility to keep and maintain records for each permitted emission point to demonstrate compliance with applicable thresholds. Facility emissions data are maintained for both the asphalt plants and the stone-processing equipment. Emissions of Total Particulates, $PM_{10}$ , CO, sulfur dioxide ($SO_2$), nitrous oxide ($NO_X$), and volatile organic compounds (VOCs) from the asphalt plant are monitored and recorded. For the stone-processing equipment, monitoring is conducted for Total Particulates only.

Based on a review of facility emissions data included in Attachment A of the Air Resources Report (Appendix G) and as Appendix G.1, the actual emissions of CO, $PM_{10}$ , $SO_2$, $NO_X$, and VOCs from the asphalt plants are well below the threshold limits set by the NYSDEC. The facility emissions for 2000-2005 and the threshold limits are summarized in the following table.

TABLE 2
BUFFALO CRUSHED STONE ASPHALT PLANT EMMISIONS

| POLLUTANT | YEAR | | | | | | NYSDEC REGULATORY THRESHOLD LIMIT (TPY) |
|---|---|---|---|---|---|---|---|
| | 2000 (TPY) | 2001 (TPY) | 2002 (TPY) | 2003 (TPY) | 2004 (TPY) | 2005 (TPY) | |
| $PM_{10}$ | 2.69 | 2.81 | 2.92 | 2.46 | 2.57 | 2.78 | 100 |
| CO | 52.59 | 56.09 | 58.35 | 49.52 | 51.95 | 28.13 | 100 |
| $SO_2$ | 1.02 | 1.02 | 1.06 | 0.88 | 0.91 | 2.86 | 100 |
| NOx | 6.80 | 6.46 | 6.71 | 5.49 | 5.55 | 4.32 | 100 |
| VOCs | 4.08 | 3.45 | 3.58 | 2.82 | 2.71 | 2.58 | 50 |

From 2000 to 2005, Total Particulate emissions from the stone-processing plants ranged from 13.65 tpy to 15.73 tpy, which is well below the regulatory threshold for $PM_{10}$ of 100 tpy. Considering that $PM_{10}$ is only a component of Total Particulates, comparison to the $PM_{10}$ limit provides an added level of conservatism.

4.1.3.2.2.2 Inhalable Particulates

Particulate matter is the generic name used to describe small particles of solid or semi-solid materials, liquid droplets, aerosols and combinations thereof that are present in the ambient air. Particulates less than 10-microns in diameter are designated as $PM_{10}$. Depending on their size, particulates can influence the human respiratory functions. Larger particles, in the range of 0.5 to 5.0-microns, can be inhaled but are normally deposited in the bronchi before reaching the alveoli. Particles smaller than 0.5-microns can settle in the alveoli and some may be absorbed into the blood stream. Particles smaller than 10 microns are typically the particles of concern, because the smaller particles in this range are not filtered out by the human body and can end up deep in the lung cavity. Therefore, in order to evaluate public health concerns, this particle size range was chosen for the air study at the quarry.

The real-time $PM_{10}$ monitoring was performed at the project site during the week of October 24 through October 28, 2005, and was conducted from 7:00 AM through 4:00 PM each day. Four occurrences of rain were experienced during the monitoring period. Particulate monitoring is not considered to be representative of actual site conditions during rain events based on the fact that the rain suppresses airborne particulates and the air monitoring instrument records water vapor. Therefore, monitoring was suspended during rain events, which occurred on the following days during the following time periods:

- Monday October 24, 2005 – From 1:00 pm until the end of facility operations at 4:00 pm;
- Tuesday October 25, 2005 – All day;
- Wednesday October 26, 2005 – From 7:00 am to 7:30 am; and
- Friday October 28, 2005 – From 11:30 am until the end of facility operations at 4:00 pm.

No concerns with respect to the accuracy of the data collected before or after these rain events have been identified, nor do the resulting data gaps significantly limit the results of this monitoring program.

The survey was completed by placing one monitoring instrument upwind of the project site and two instruments at downwind locations along the existing quarry perimeter. The monitoring locations were selected based upon daily predictions of the prevailing wind direction obtained from the National Weather Service. For

each monitoring event, one of the downwind instruments was positioned to enable the collection of data from a point situated between the project site and residential receptors to the east southeast or southwest of the project site, depending upon wind direction. The air monitoring instruments sampled and analyzed the air every 10 seconds and averaged and recorded the data for 15-minute intervals.

Particulate matter monitoring data has been summarized in Table 3 and indicates that the overall average daily concentration of $PM_{10}$ at the upwind station was 14.4 $\mu g/m^3$. Daily average concentrations at the two downwind stations were 50.7 $\mu g/m^3$ at the southern location, and 38.4 $\mu g/m^3$ at the northern location. It must be noted that these values do not include the initial and final measurements recorded during instrument set-up and shut-down each day, to prevent bias caused by dust generated during the sample technician's movement around the instruments nor do these values include measurements recorded during the rain events listed above.

TABLE 3
AIRBORNE PARTICULATE MATTER CONCENTRATIONS ($PM_{10}$)

| Date | Overall Minimum Concentration ($\mu g/m^3$) | | | Overall Average Concentration ($\mu g/m^3$) | | | Overall Maximum Concentration[1] ($\mu g/m^3$) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Upwind | Downwind south | Downwind north | Upwind | Downwind south | Downwind north | Upwind | Downwind south | Downwind north |
| Monday 10-24-05 | 0 | 18.9 | 6.1 | 1.2 | 67.1 | 38.3 | 18.6 | 158.1 | 168.2 |
| Tuesday 10-25-05 | **No Monitoring Event** | | | | | | | | |
| Wednesday 10-26-05 | 0 | 0 | 0.8 | 4.9 | 28.4 | 9.0 | 104.9 | 354.5 | 86.1 |
| Thursday 10-27-05 | 0 | 0 | 7.3 | 1.4 | 17.5 | 51.2 | 24.1 | 258 | 268.9 |
| Friday 10-28-05 | 19.4 | 32.4 | 22 | 50.1 | 89.8 | 55.0 | 194.1 | 176.7 | 128.9 |

1. These values do not include the initial and final measurements recorded during instrument set-up and shut-down, respectively, to prevent bias caused by dust generated during the sample technician's movement around the instruments.

The overall maximum concentration at the upwind location was 104.9 $\mu g/m^3$ and was 354.5 $\mu g/m^3$ and 268.9 $\mu g/m^3$ at the downwind locations.

The NYSDEC does not have a standard for $PM_{10}$ emissions and the federal standard for $PM_{10}$ has not been officially adopted by NYSDEC, but is currently being applied to determine compliance status. The $PM_{10}$ primary standards are 150 $\mu g/m^3$ over a 24-hour averaging time and 50 $\mu g/m^3$ over an annual averaging time. This standard was put in place in 1987 when the United States Environmental Protection Agency (USEPA) revised the ambient air quality standard for particulates so as to reflect direct impact on human health by setting the standard $PM_{10}$ for fugitive dust. Based upon an examination of air quality composition, respiratory tract deposition, and health effects, $PM_{10}$ is considered

conservative for the primary standard and fulfills the requisite to protect public health with an adequate margin of safety.

The data obtained was collected at the quarry during approximately 9-hour monitoring periods, in the absence of rain events, and occurred during daylight business hours each day. The average $PM_{10}$ concentrations recorded during these daily monitoring periods were considered to represent worst-case average concentrations because reduced activity, not only at the quarry, but also within the site vicinity and the surrounding areas, during non-business and night-time hours would act to decrease the overall average concentrations of airborne particulate matter during a 24-hour monitoring period. Based upon the monitoring results, the worst-case, daily average concentrations of $PM_{10}$ at all three monitoring locations were well below the 150 $\mu g/m^3$ average daily limit set forth by the USEPA.

4.1.3.2.2.3 Respirable Silica

In 1996, the NYSDEC completed an evaluation of respirable silica-bearing dust emissions from the quarry. This evaluation was performed in response to a complaint letter received by NYSDEC that identified concerns relating to nuisance and respiratory effects of dust generated by the quarry, with particular emphasis concerning exposure to silica- bearing dust.

The exposure evaluation was completed using modeling software developed by the NYSDEC and USEPA. These software programs establish guidance for the control of toxic ambient air contaminants. The guidance is intended to protect the general public from adverse health effects that may be induced by exposure to ambient air contaminants.

The results of the NYSDEC exposure evaluation indicated that particulate emissions for the quarry did not exceed short-term or long-term guidance values. Furthermore, the results indicated that emissions of respirable amorphous silica dust from the quarry were also well below short and long-term guidance values established to protect the general public from adverse health effects. Lastly, the NYSDEC report also concluded that the total particulate and respirable amorphous silica emissions from the quarry were below the threshold limit values established to protect workers exposed during an average work week. The memorandum regarding the NYSDEC's 1996 exposure evaluation is provided in Appendix I.

To supplement the exposure evaluation performed by the NYSDEC, a site-specific sampling program was executed in 1998 by Clough Harbour & Associates to collect and analyze samples of dust generated by quarry operations for the presence of respirable crystalline silica. This sampling program consisted of the collection and analysis of three samples of dust

generated from operations at the quarry to determine the concentration of respirable crystalline silica, if any.

The three samples were collected from points located within the interior of the site, in the vicinity of the crushing plant and main haul road. More specifically, the samples were collected from: along the north side of the main control building (S-1); northeast of the main control building (S-2); and east of quarry access road near the asphalt plant (S-3). S-1 and S-2 were positioned to collect dust from the crushing, screening and conveying operations, while S-3 was positioned to obtain a dust sample from the haul road and the mixing of aggregates at the asphalt plant. Samples S-1 and S-2 were collected from an area that contained a dust plume from one of the on-site screening operations.

The analytical results indicated that one sample (S-1) contained 0.13 milligrams (mg) of respirable crystalline silica (as quartz), while no respirable crystalline silica was detected in the remaining two samples. Sample S-1 was collected in close proximity to the screening and conveying operation near the northern side of the crushing plant. The analytical results for the sampling event are included in Appendix J.

Based upon the duration of the sampling event, the average hourly concentration of respirable crystalline silica (as quartz) in the three samples was determined to be 0.017 milligrams per cubic meter ($mg/m^3$).

Based upon the NYSDEC dispersion model discussed above in this subsection, the concentration of dust emissions from the existing processing facilities at the quarry would dissipate by a factor of more than ten prior to reaching any sensitive receptors located on adjacent properties surrounding the site. As a result, respirable crystalline silica (as quartz) would be projected to dissipate to an average hourly concentration of 1.7 $\mu g/m^3$ at or near the property boundary.

The NYSDEC's Annual Guidance Concentration (AGC) for crystalline silica is 0.12 $\mu g/m^3$ (Source: *DAR -1 AGC / SGS Tables*, December 22, 2003, NYSDEC Division of Air Resources Air Toxics Section. To compare the average hourly concentration of respirable crystalline silica (as quartz) projected at or near the property boundary (1.7 $\mu g/m^3$) with the AGC, the NYSDEC's screening conversion factor of 0.1 is applied (Source: *Guidelines for the Control of Toxic Ambient Air Contaminants,* NYSDEC, November 12, 1997). The derived value is 0.17 $\mu g/m^3$ for an annual averaging period. Further considering the typical annual operating hours for the quarry of 1960 hours, a factor of .22 is derived (1960 of 8760 hours in one year). The adjusted concentration of respirable silica (as quartz) is 0.04 $\mu g/m^3$ for an annual averaging period, which is below the NYSDEC annual guidance concentration of 0.12 $\mu g/m^3$.

It should be noted that the three sampling points were at the quarry surface and that the proposed action involves the relocation of the processing equipment to the eastern quarry basin. As discussed in Section 5.1.3.3.3, projecting the concentration of air contaminants generated at the quarry surface, rather than accounting for the relocation of the processing equipment and operations to the eastern quarry basin, provides a conservative result. Air contaminants generated in the quarry basin are expected to be more diluted prior to reaching the property boundary than those generated at the quarry surface.

The concentration of respirable crystalline silica (as quartz) detected in sample S-1, collected near the processing facilities located on the interior of the site, was compared with the OSHA Permissible Exposure Limit (PEL) for respirable quartz calculated in accordance with the formula provided in CFR 1910.1000. The calculated OSHA PEL, using this formula, is 1.11 $mg/m^3$. To enable a comparison with the PEL, which is an 8-hour Time-Weighted Average (TWA), the measured concentration was projected for an 8-hour period based upon an average hourly concentration of 0.052 $mg/m^3$. This yields a concentration of 0.42 $mg/m^3$, which is well below the PEL established for the protection of workers during an average work week.

In 2000, the NYSDOH also sampled and analyzed stones from the BCS quarry. The analysis showed that the stones are mostly limestone, with minor amounts of chert (also called silicon dioxide) and trace amounts of crystalline silica. No asbestos or heavy metals were detected in the samples. The NYSDOH memorandum to the NYSDEC about the 2000 sampling event is provided in Appendix K.

#### 4.1.3.2.2.4 Hydrogen Sulfide Gas

A study of the source of the hydrogen sulfide odor emitted from groundwater pumped from the quarry during dewatering operations was completed by the State University of New York at Buffalo (SUNYAB) Center for Integrated Waste Management in 1998. The report indicated that naturally occurring, sulfide-bearing sediments present within the quarry sump or precipitates drawn up from underlying strata were being introduced into the dewatering effluent as a result of the disturbances caused by intermittent, high volume pumping from the bottom of the quarry sump. Based upon this conclusion, it was recommended that the dewatering system be reconfigured and the pumping rate be decreased to avoid the agitation of these sediments, thereby minimizing their presence and associated odor in the discharge water. This report is included in its entirety in the Air Resources Report (Appendix G).

These recommendations were implemented at the quarry by raising the elevation of the intake of the dewatering pump to just below the standing water surface within the quarry sump, and by instituting controlled and sequenced pumping

operations. In addition, BCS ceased using groundwater for dust suppression on internal roads and in the processing plants. Instead, metered municipal water (Erie County) is used.

From June through September 1999, URS Greiner Woodward Clyde (URS) completed six air sampling events around the perimeter of the project site. The sampling and analyses were completed for the Town of Cheektowaga in response to Town employees' and area residents' complaints of strong odors. In their report, which is included in Appendix L, URS concluded that hydrogen sulfide, sulfur dioxide and particulate concentrations detected during the six events were very low and most likely not at levels that could pose a health hazard to nearby residents. This conclusion reflects that results were below established regulatory exposure limits. The hydrogen sulfide odors were, however, identified as a nuisance. The NYSDEC has a general prohibition against nuisance odors (6 NYCRR Part 211). Furthermore, according to the United States Environmental Protection Agency (USEPA), the threshold at which hydrogen sulfide odors become offensive is 3 ppm (see excerpt from United States Environmental Protection Agency, Center for Environmental Research Information, "Design Manual: Odor and Corrosion Control in Sanitary Sewage Systems and Treatment Plants", October 1985 found in Appendix M).

Subsequent to the URS 1999 study, BCS contracted Golder Associates (Golder) to identify and evaluate treatment alternatives to address the hydrogen sulfide odors. Golder issued the *Report on Quarry Water Treatment Pilot Test* in March of 2001 which details the treatment system to remove sulfides, odor and turbidity associated with the discharge of quarry water to Cayuga Creek. On March 28, 2001, the NYSDEC issued a letter accepting this treatment system and required that BCS perform sampling of the quarry water prior to the discharge to Cayuga Creek to ensure that the system was operating properly. A summary of this system is included below, while the Golder report detailing the hydrogen sulfide system and the NYSDEC acceptance letter are included in Attachment H of the Air Resources Report (Appendix G). This system includes the following major components:

- The installation of a hydrogen peroxide injection system, including a storage tank, metering pump and associated appurtenances;
- Modifications to the piping system to transfer water from the East quarry basin to the West Quarry basin; and
- The installation of a flocculation injection system consisting of two components. A 45-48% alum solution and a 0.5% polymer solution (Betz Dearborn polyfloc 1110m), metering pumps and associated appurtenances. The alum is injected upstream in the east/west transfer line and the polymer is injected downstream in that same line.

As part of this treatment program, BCS performs daily monitoring of the hydrogen sulfide emissions from the discharge water using an Industrial Scientific Corporation T-80 single gas meter, which measures hydrogen sulfide at concentrations equal to and/or greater than 1 ppm. Monitoring is performed at the equalization tank prior to its discharge to Cayuga Creek and the resultant data is recorded on a daily log. Review of the daily air monitoring logs indicates that hydrogen sulfide has not been detected at the project site since daily monitoring began in May 2001 following the implementation of the above referenced treatment system.

According to the Cheektowaga Citizens Coalition, Inc., on February 24, 2004, members of the Bellevue Bucket Brigade sampled air along Como Park Boulevard in the vicinity of the project site. The samples were taken at approximately 8:00 pm, in response to the strong odor of rotten eggs. Information about the coalition's sampling event is provided in Appendix N. A review of the quarry pumping log for February 24, 2004 indicates that the quarry was discharging exclusively from the west basin on that date. Hydrogen sulfide levels, as included on the pumping log (also in Appendix N), were less than 1 ppm in the air and less than 0.5 ppm in the discharge water.

The Bucket Brigade samples were collected using a sampling device that is described as a "do-it-yourself" bucket sampler, which consists of an air-sampling device inside a five-gallon bucket. The bucket has an inlet leading to a plastic bag, an outlet, stainless steel valves and pump. The sample is captured in the bag, the bag is sealed and the sample sent for analysis. The sample is a one-time grab sample.

The sampling kit includes a chain-of-custody record, shipping instructions and services of an USEPA-approved laboratory. The method reportedly meets USEPA's sampling requirements. The Coalition sent their sample via overnight delivery to Air Quality Laboratory in Simi Valley, California.

According to the Coalition's accounts of the sampling event, results indicated hydrogen sulfide concentrations of 72.7 ug/$m^3$ and 67.8 ug/$m^3$ (Units assumed to represent micrograms per cubic meter). Using the conversion factor provided in 6 NYCRR 257-10.3 for hydrogen sulfide of 14 $\mu g/m^3$ equaling 0.01 ppm, the results equate to 0.0519 ppm and 0.0484 ppm, respectively. These results are consistent with the daily monitoring results recorded by BCS.

A real-time hydrogen sulfide gas survey was performed by TVGA at the quarry on October 28, 2005. The survey was performed to identify hydrogen sulfide concentrations on the property and in the site vicinity. The survey was conducted using a direct-reading instrument capable of detecting hydrogen sulfide gas at concentrations ranging from 1-100 ppm. Measurements were collected at numerous locations around the quarry rim, crushing plant, site

drainage ditches, drainage ditch between Como Park Boulevard and Cayuga Creek, and at the discharge point to Cayuga Creek (i.e., Outfall 001).

The survey was conducted during the morning, while water was being pumped from both the east and west quarries. This time period was selected to represent worst-case conditions because the agitation of this water has been identified as the source of the hydrogen sulfide odors.

No concentrations of hydrogen sulfide equal to or greater than 1 ppm were detected at any of the survey locations within, or adjacent to, the quarry, or in the surrounding community.

The permissible exposure limit for hydrogen sulfide, established by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.1000, is 20 ppm. This permissible exposure limit is expressed as a ceiling concentration which must not be exceeded during any part of a workday. OSHA also established a 10-minute maximum peak exposure limit of 50 ppm. The relevant table from 29 CFR 1910.1000 is included as Appendix O.

No concentrations of hydrogen sulfide equal to or greater than 1 ppm were detected on-site in the course of daily operational monitoring performed since 2001, as a result of the community sampling and analysis conducted in 2004, or during the recent survey performed by TVGA. These results indicate that hydrogen sulfide levels are well within the permissible exposure limits promulgated by OSHA. OSHA is responsible for developing and enforcing exposures limits to protect the safety of workers in the workplace. The comparison to the OSHA exposure limit was utilized because it was developed to protect the health and safety of those who would be exposed to the greatest concentrations (source areas) of this parameter on a daily basis.

New York State has established an ambient air quality standard for hydrogen sulfide of 0.01 ppm for a one-hour period. The primary objective of the standard, per the regulation, is to prevent disagreeable odors. A comparison between the monitoring results and this standard is not possible because the standard is well below the detection limit of real-time air monitoring field instruments, such as those utilized for the site-specific survey and daily operational monitoring. A comparison between the analytical results from the samples collected by the community bucket brigade and the State standard is also not appropriate, since the subject samples were instantaneous grab samples and the standard applies to a one-hour time weighted average.

As mentioned previously, according to the USEPA, the threshold at which hydrogen sulfide odors become offensive is 3 ppm (see excerpt from United States Environmental Protection Agency, Center for Environmental Research Information, “Design Manual: Odor and Corrosion Control in Sanitary Sewage

Systems and Treatment Plants", October 1985 found in Appendix M). Although this threshold does not represent a regulatory standard, it serves as an objective measure for determining the level at which hydrogen sulfide odor becomes objectionable. No concentrations approaching this threshold were detected within or adjacent to the quarry during the TVGA survey, the community sampling event or the daily operational monitoring performed by BCS since the implementation of the dewatering system reconfiguration and hydrogen sulfide treatment system.

In regard to the effectiveness of the treatment system, the number of odor (i.e., hydrogen sulfide) complaints received by BCS since its installation has significantly decreased. BCS maintains a log of such complaints, which is available for review at the BCS office. The log indicates the following:

| Year | Odor Complaints Received |
|---|---|
| 2001 | 9 |
| 2002 | 5 |
| 2003 | 0 |
| 2004 | 0 |
| 2005 | 1 |
| 2006 | 0 |

To register a complaint about odors believed to be generated by the quarry, the public can contact BCS directly or the Town of Cheektowaga offices via telephone or email (Supervisor's Hotline). The Town and BCS have an agreement that all complaints are to be faxed to BCS for follow up. Also, the public may also contact the NYSDEC Division of Mineral Resources with complaints about quarry-related issues.

4.1.3.3 Airborne Health Issues

4.1.3.3.1 Background

Residents of the Bellevue area of Cheektowaga have raised concerns about potential exposures to silica dust, hydrogen sulfide and diesel truck exhaust related to BCS's operations as well as potential exposures from the landfills and inactive hazardous waste disposal sites in the area. The residents have conducted their own health-related surveys and various public and private parties have completed studies in the vicinity of the project site.

This section summarizes the studies and provides data from BCS's employee monitoring related to silica dust.

#### 4.1.3.3.2 Depew / Cheektowaga Taxpayers Association

The Depew / Cheektowaga Taxpayers Association completed an independent health-related survey of the residents of the Bellevue area in the spring of 2000. The survey found 36 cases of cancer, eight cases of diabetes, seven cases of thyroid disorders and three cases or fewer of various other illnesses within about one mile of the project site (*Buffalo News* article in fax dated June 14, 2000, Appendix P).

#### 4.1.3.3.3 NYSDOH Studies

In response to the Depew / Cheektowaga Taxpayers Association's survey, New York State Department of Health (NYSDOH) epidemiologists and the NYSDEC reviewed available information about the community's environmental concerns. The NYSDOH reported that the list of health conditions provided from the community survey did not appear unusual, but it was not possible to draw definite conclusions due to inherent deficiencies of such surveys. To address the community's concerns, the NYSDOH designed and conducted two studies: A ZIP Code Screening Study of Cancer Incidence and an Evaluation of Asthma and Other Respiratory Hospital Admissions. Both studies were among residents in ZIP codes near the BCS project site, 14043 and 14227. Figure 7 shows the study area. Also, both studies used data from 1994 to 1998.

The NYDOH issued their findings for both of the studies in March 2000. The study results are summarized below. NYSDOH literature on the studies is included as Appendix Q.

Cancer Incidence - The ZIP Code screening compared the number of people within the study area diagnosed with cancer with the number of people the NYSDOH "would expect to find" during the same time based on cancer rates for all of New York State except New York City. The NYDOH found that:

- The total number of people diagnosed with cancer in the study area was similar to what the NYSDOH expected to find.
- When the different types of cancer were looked at separately, the number of uterine cancers diagnosed was greater than expected. The difference was statistically significant. The NYDOH noted that uterine cancer has no environmental risk factors; it is caused by personal risk factors.
- The number of prostate cancer diagnoses was lower than expected.
- The number of women diagnosed with colon cancer and those with colorectal cancer were less than expected.
- The number of diagnoses of all other types of cancer was similar to what the NYDOH expected.

In their interpretation, the NYSDOH stated that the study found no evidence of cancer patterns that may be related to environmental factors.

Respiratory Admissions - In their interpretation of the 1994 – 1998 hospitalization data, the NYSDOH stated that:

- The data provide no evidence of elevations of the rate of asthma or other respiratory conditions among children or adults residing in the two ZIP codes near BCS.
- Review of specific addresses showed no spatial clustering of childhood asthma cases near the project site.
- The appearance of spatial clustering among adults was due to multiple cases living in the same residential facilities. The residential facilities in this instance are nursing homes within the study area.

The NYSDOH elaborated on the apparent clustering, stating that elderly residents of nursing homes may be at greater risk for respiratory disease hospitalizations than other elderly people of the same age and that people with pre-existing health problems are more likely to reside in nursing homes and may also be more likely to be hospitalized for respiratory problems.

The NYDOH cautioned that, although useful in characterizing the burden of severe disease in a community, the evaluation cannot assess if links exist between particular environmental factors and health outcomes.

To address citizens' complaints that the NYSDOH cancer-incidence study discussed above covered too large an area and therefore diluted results, the NYSDOH completed another study of newly diagnosed cancers in the Bellevue area of Cheektowaga. The new study evaluated cancer cases diagnosed between 1985 and 2001 in a smaller study area. The previous study area had a population of about 50,000 whereas the population within the newer study area was 4,000.

Like the previous study, the newer study was designed in cooperation with local residents. The methodology for the study involved two components:

1. The actual observed number of people diagnosed with cancer during the years of the study, by gender and type of cancer, was counted from the New York State Cancer Registry.

2. The expected number of people diagnosed with cancer during the years of the study, by gender and type of cancer, was calculated based on the age and distribution of people living in the study area.

The study found that, between 1985 and 2001:

- The area would expect 204 cases of cancers in males but 186 were diagnosed;
- The expected number of cases in females was 212, compared with 189 actually observed;
- The actual number of cases of cancer of the uterus, which was found in the previous study to exceed the number expected, was similar to the number expected; and
- No single cancer type that showed a difference between expected and observed numbers was greater than the differences that frequently occur by chance.

The study concluded that no evidence of any unusual patterns of cancer incidence of people living in the Bellevue area was found and no further investigation was indicated. The information about the study provided by the NYSDOH during an April 27, 2006 public meeting on the study is included in Appendix R.

4.1.3.3.4 Lwebuga-Mukasa Study

Dr. Jameson Lwebuga-Mukasa, who is affiliated with the University of Buffalo (UB) School of Medicine and founder of the Center for Asthmatic Exposure at Buffalo General Hospital, conducted a health study of residents within a two-mile radius of the project site in 2000-2001. The study included a community health survey, a survey of school-aged children and their parents, and pulmonary function testing. The Depew / Cheektowaga Taxpayers Association assisted Dr. Lwebuga-Mukasa with the study.

Requests for information as allowed by the Freedom of Information Law (FOIL) were submitted to the relevant NYSDOH and UB departments to obtain documentation about the study. The response from the NYSDOH contained newspaper articles from 2000 about the study; a letter confirming the date and time of a then-upcoming meeting between Dr. Lwebuga-Mukasa and the NYSDOH; and notes from a presentation by Dr. Lwebuga-Mukasa in March 2001. The UB response contained no information about the study.

According to NYSDEC Region 9 staff during the July 8, 2005 scoping meeting, the Lwebuga-Mukasa study was not finalized. Therefore, no conclusions can be drawn from the study and no further inquiry concerning the study was made.

#### 4.1.3.3.5 UB Health Study

The NYSDOH, State University of New York at Buffalo (UB) and the Cheektowaga Citizens Coalition initiated a study in June 2003 to evaluate the rate of occurrence of autoimmune and respiratory diseases in the Bellevue area. Dr. Joseph A. Gardella, Jr., who is affiliated with the Environment and Society Institute at UB, is the Principal Investigator for the study.

The rate of occurrence of the subject diseases in the Bellevue area is to be compared to that of another area in Cheektowaga. This study is to include data from 1983 to 2002, thereby addressing current and past residents. During telephone discussions in late July 2005, both NYSDOH and UB staff indicated that the study was in peer review and that conclusions could not be drawn at this time.

Requests for information as allowed by the Freedom of Information Law (FOIL) were submitted to the relevant NYSDOH and UB departments to obtain documentation about the studies. The information received was general in nature (newspaper articles, protocol iterations and study justification) and confirmed the study is in process.

#### 4.1.3.3.6 BCS Employee Exposure Monitoring

Some of BCS's operations are regulated by the Mining Safety and Health Administration (MSHA), which is a division within the United States Department of Labor. The MSHA requires periodic monitoring of employee exposure to respirable dust and other contaminants. The most recent monitoring event was on April 6, 2005. A MSHA inspector monitored two employees for respirable dust (quartz). Results indicate the two employees' exposure during the event was below regulatory limits. The higher of the two results was about one-half (0.64 mg / $m^3$) of the MSHA exposure limit (1.20 mg /$m^3$).

The personal exposure data summary and analytical report for the sampling are provided in Appendix S. The employees' names are redacted for privacy.

### 4.1.3.4 Complaint Tracking and Compliance

Citizens who believe they might be or have been adversely affected by the quarry operations can take one or more of the following actions:

1. Request and authorize in writing a pre-blast survey to document the condition of their property prior to a blast to allow for a comparison with post-blast conditions.

2. Contact the Town of Cheektowaga offices via telephone (686-3465) or email (Supervisor's Hotline http://www.town.cheektowaga.ny.us/supervisors_hotline.asp) to register a complaint. The Town and BCS have an agreement that all complaints are to be faxed to BCS for follow up.

3. Contact the NYSDEC Division of Mineral Resources, which would in turn notify BCS and investigate the complaint.

4. File a claim of property damage through their property insurer.

5. File a claim of property damage against BCS through BCS blasting contractor, which is responsible to administer all such claims.

Over the last 25 years, BCS, the Town of Cheektowaga and the NYSDEC have received complaints from citizens concerning odors, dust, fumes and vibrations from the operation of the quarry. Each party follows up on these complaints, either through site inspections, interviews or other data collection. Throughout the 25 years of tracking these complaints, none has resulted in a sanction or fine by the NYSDEC or other environmental regulatory agency.

### 4.1.4 Ecological Resources

#### 4.1.4.1 Overview

An ecological survey of the isthmus was performed by Northern Ecological Associates, Inc. (NEA) on July 12, 2005 to characterize the plant communities occurring on the isthmus; determine whether wetlands or other waterbodies are present on the isthmus; and document the presence/absence of state- or federal-listed rare, threatened and endangered species (RT&E) within the area.

In New York, the NYSDEC's Natural Heritage Program (NYNHP) is responsible for the protection of RT&E plant, fish and wildlife species. The United States Fish and Wildlife Service (USFWS) has the equivalent role on the federal level. The NYSDEC incorporates the federally listed T&E species in its definitions of T&E species of plants, fish and wildlife, as explained below.

For fish and wildlife, the NYSDEC classifies species according to the following definitions (6 NYCRR 182.2):

- *Endangered species* are any species which meet one of the following criteria:

  (1) are native species in imminent danger of extirpation or extinction in New York; or

(2) are species listed as endangered by the United States Department of the Interior in the 'Code of Federal Regulations' (50 CFR part 17).

- *Extirpation* means not extinct, but no longer occurring in a wild state within New York, or no longer exhibiting patterns of use traditional for that species in New York (e.g., historical breeders no longer breeding here).

- *Threatened species* are any species which meet one of the following criteria:

  (1) are native species likely to become an endangered species within the foreseeable future in New York; or
  (2) are species listed as threatened by the United States Department of the Interior in the Code of Federal Regulations (50 CFR part 17.

- *Species of special concern* are species of fish and wildlife found by the department to be at risk of becoming either endangered or threatened in New York. Species of special concern do not qualify as either endangered or threatened, as defined in Part 182.2(g) and 182.2(h), at this time and are not subject to the provisions of Part 182. Species of special concern are listed in Part 182.6(c) for informational purposes only.

For plants, the NYSDEC classifies species according to the following definitions (www.dec.state.ny.us/website/dfwmr/heritage/plantlaw):

- Endangered Species are those with:
  1. 5 or fewer extant sites, or
  2. fewer than 1,000 individuals, or
  3. restricted to fewer than 4 U.S.G.S. 7 1/2 minute topographical maps, or
  4. species listed as endangered by the U. S. Department of Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.
- Threatened are those with:
  1. 6 to fewer than 20 extant sites, or
  2. 1,000 to fewer than 3,000 individuals, or
  3. restricted to not less than 4 or more than 7 U.S.G.S. 7 1/2 minute topographical maps, or
  4. listed as threatened by the U. S. Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

- Rare are that have:
  1. 20 to 35 extant sites, or
  2. 3,000 to 5,000 individuals statewide.

The term "RT&E" is used in this DEIS to refer to the combined group comprised of RT&E plant species and T&E fish and wildlife species. Note that the USFW does not have a "rare" species category. It is a state classification.

The record sources reviewed, methods utilized to complete the field survey, and findings with respect to site ecology and the occurrence of RT&E species are summarized in the following subsections. The Ecological Survey Report prepared by NEA is presented in its entirety in Appendix T. Additionally, this study was supplemented with information obtained during the ecological study of the quarry and adjoining land performed by Beak Consultants, Inc. of Lancaster, New York in the spring of 1998. The Beak ecological study, entitled "Ecological Survey of the Proposed Buffalo Crushed Stone Expansion Site", August 1998, is provided in Appendix U

4.1.4.2 Methods

Prior to initiating ecological field surveys, NEA reviewed existing site information, including:

- The United States Geological Survey (USGS) 7.5-minute series topographic quadrangle maps (Buffalo Northeast and Lancaster, NY) to determine presence/absence of wetland symbols or mapped water bodies;
- The National Wetland Inventory (NWI) 7.5-minute series quadrangle maps (Buffalo Northeast and Lancaster, NY) from the U.S. Fish and Wildlife Service (USFWS) to determine presence/absence of mapped, federally-designated wetlands;
- NYSDEC Freshwater Wetlands maps (Buffalo Northeast and Lancaster, NY) to determine presence/absence of mapped NYSDEC wetlands; and
- The *Soil Survey of Erie County, New York* map (United States Department of Agriculture/Soil Conservation Service [USDA/SCS] 1986) and hydric soils list for Erie County (USDA/SCS 1992) to determine presence and extent of hydric soils.

Additionally, the USFWS New York Field Office and the New York Natural Heritage Program (NYNHP) office were contacted to determine whether federal- or state-listed RT&E species are known to occur in the vicinity of the isthmus.

The field survey of plant communities, RT&E species and wetlands occurring on the isthmus was performed on July 12, 2005. The timing of the surveys

overlapped with the active growth period for vascular plants, as well as the nesting period for most birds. Ecologists from NEA traversed the isthmus on foot and observed it from clear observation points to complete a comprehensive inventory of plants and animals. A comprehensive inventory of plant species, qualitative identification of dominant plant species and a record of any distinctive habitat features occurring on the project site was conducted during the field survey. Wildlife occurrence was documented from direct observations, vocalizations, and other evidence (e.g., tracks, scat, skulls, burrows, nests). NEA also assessed habitat availability and suitability for RT&E species based on the results of the plant community mapping and characterization task.

The wetlands survey was accomplished using the *Routine On-Site Determination Method*, as described in the *USACE Wetlands Delineation Manual* (Environmental Laboratory 1987) (Note that the manual is available on-line at.).This technique involved collection and review of background information, followed by an on-site survey. The on-site survey involved a walk-over inspection to identify topographic, drainage, and vegetation features that would indicate the potential for wetland classification. Potential wetland areas were investigated to determine whether wetland criteria (i.e., hydrophytic vegetation, hydric soils, and wetland hydrology) were met according to the USACE *Wetlands Delineation Manual*.

4.1.4.3 Results and Conclusions

4.1.4.3.1 Background Information

A review of the aforementioned USGS topographic maps revealed that the topography of the isthmus is fairly level with the exception of several small hills (i.e., gravel piles) occurring on the northern portion of the isthmus. No streams or other water bodies are mapped within the site. No NWI wetlands or NYSDEC Freshwater Wetlands are mapped within or adjacent to the isthmus.

The *Soil Survey of Erie County, New York* (USDA SCS 1986) map, which is provided in the ecological report as Figure 2, indicates that three soil types were present on the isthmus. Those are: Cosad loamy fine sand (Cv), Odessa silt loam (Od), and Quarries (Qu). Based on the *Erie County, New York List of Hydric Soil Map Units* (USDA SCS 1992), Cosad and Odessa silt loam soils are classified as non-hydric with the potential for hydric inclusions. This point is made for historical reference. Through quarrying-related activities, including the placement of the processing equipment on the isthmus, surface soils have been removed from the isthmus.

Except for occasional transient individuals, no federally-listed or proposed T&E species are known to exist within the project impact area. Additionally, no habitat

in the project impact area is currently designated or proposed "critical habitat" in accordance with provisions of the Endangered Species Act (see Appendix T).
No records of state-listed RT&E species or significant ecological communities have been documented on or adjacent to the isthmus (see Appendix T).

The New York Natural Heritage Program (NYNHP) response indicated that an imperiled, but not classified as "listed", species of mussel was observed along Cayuga Creek in 1987-1990 at a distance greater than one-half mile (measured at creek bed) upstream of where the county-owned drainage ditch into which BCS's SPDES outfall enters Cayuga Creek. "Imperiled" is a NYNHP classification term, not specifically defined in the regulations. The mussel's "S2" classification signifies the species has six to twenty occurrences in the state, few remaining individuals, acres or miles of stream, or factors making it is very vulnerable in New York State. On a global level, the mussel is classified as demonstrably secure.

As directed by the NYNHP, the details of the observation record are not to be released to the public due to the sensitive nature of the information. Thus, the NYNHP response included in Appendix T is redacted accordingly.

#### 4.1.4.3.2 Plant Community Characterization

Characterization of plant communities occurring on the isthmus conducted during the field survey revealed the presence of four separate plant communities and one developed community (industrial structures). The plant communities occurring on the isthmus consisted of a successional old field; sparsely vegetated perimeter areas; successional forest; and sparsely vegetated gravel piles. A brief description of each community is provided below and graphical depictions of these areas are shown in Figure 3 of the Ecological Survey Report.

A small successional old field community is present in the south-central portion of the isthmus. It is located on south and east facing slopes bordering the east quarry. This community supports a sparse to moderate growth of herbs, with scattered tree and shrub seedlings and saplings. The dominant plants in the successional old field community include brown knapweed (*Centaurea jacea*), common reed (*Phragmites australis*), and Japanese knotweed (*Polygonum cuspidatum*). About 40 sub-dominant species were recorded in this community, many of which are typical of disturbed environments.

Sparsely vegetated perimeter areas were identified along the eastern edge of the isthmus. The community is located on a moderate, east-facing slope. This community supports a sparse growth of herbs. Only one of the 17 species observed in this community, brown knapweed, was abundant enough to be considered a dominant species.

A forest community was identified on the northern edge of the isthmus, which included a successional forest growing on old gravel piles. The dominant trees include pole-sized eastern cottonwood (*Populus deltoides*), big-toothed aspen (*Populus grandidentata*), as well as the Tartarian honeysuckle (*Lonicera tatarica*) and silky dogwood (*Cornus amomum*) shrubs. The dominant herbs include mugwort (*Artemisia vulgaris*), white sweet-clover (*Melilotus alba*), and Kentucky bluegrass (*Poa pratensis*).

The sparsely vegetated gravel pile community covers much of the central part of the isthmus. It is a sparsely vegetated herbaceous community that occurs on and around more recent gravel piles. The dominant plants include brown knapweed, chicory (*Cichorium intybus*), and viper's bugloss (*Echium vulgare*).

Two areas in the central portion of the isthmus comprise industrial structures. These areas were identified as distinct industrial communities, although no plant growth was observed there during the field survey. "Community", in these instances, is used to note an area with a distinguished or identifiable characteristic. That characteristic is that the area is industrialized, not vegetated.

#### 4.1.4.3.3 Wetlands Survey

The field survey, as completed by NEA, revealed that no wetlands are present on the isthmus. None of the plant communities support hydrophytic vegetation and none exhibit indicators of wetland hydrology.

#### 4.1.4.3.4 Rare, Threatened & Endangered Species Survey

No plant species classified as rare, threatened or endangered by the USFWS or NYSDEC were observed within or adjacent to the Isthmus Area during NEA's field survey. The site does not contain significant communities or unique habitats, where T&E plant species are most likely to occur. The plant communities within the Isthmus Area are highly disturbed and include large numbers of exotic species, such as common reed, Japanese knotweed, purple loosestrife, Tartarian honeysuckle, and mugwort.

No animal species classified as rare, threatened or endangered by the USFWS or NYSDEC were observed within or adjacent to the isthmus during the field surveys. None of the wildlife species observed during the field survey are considered rare or unusual. Most occur commonly in fields, forests, and developed areas of western New York State. Species observed during the field survey include wild turkey, various swallows, raccoons and white-tailed deer.

It is NEA's professional opinion that, other than occasional transient individuals, no federal or state-listed RT&E species are likely to occur on the isthmus. This determination was based on the lack of RT&E species observations during

NEA's July 12, 2005 comprehensive field surveys, the lack of USFWS and NYSDEC records of RT&E species for the isthmus and the absence of significant communities or unique habitats on the isthmus.

## 4.2 Human Resources

### 4.2.1 Land Use and Zoning

A detailed Land Use Study was completed in support of this DEIS, and is presented in Appendix V. The scope of this study included the evaluation of existing and planned land use and zoning conditions on three geographic levels, including: (1) the Town of Cheektowaga as a whole; (2) a pre-defined portion of the Town, hereinafter referred to as the study area; and (3) the project site. The study area encompasses the area bounded to the north by Walden Avenue; to the south by Losson Road and William Street; to the west by the New York State Thruway; and to the east by Borden Road (See Figure 8). This study area includes portions of the Town of Cheektowaga and the Village of Depew. The following subsections characterize the project setting relative to land use and zoning.

#### 4.2.1.1 Zoning

##### 4.2.1.1.1 Town of Cheektowaga

The land area within the Town of Cheektowaga is 29.5 square miles, which equates to 18,880 acres. The Town of Cheektowaga is divided into three major zoning district categories including Residence, Business, and Manufacturing. According to the current *Zoning Law of the Town of Cheektowaga* (amended and reissued May 2004), each of these district categories is subdivided as follows:

*Residence Districts*:

R – Residence District
RS – Residence Single District
RA – Apartment District
RSC – Residential Senior Citizen District
RMH – Residential Mobile Home District

*Business Districts*:

NS – Neighborhood Service District
C – Retail Service District
CM – General Commercial District
MS – Motor Service District
CF – Community Facilities District

*Manufacturing Districts*:

M1 – Light Manufacturing District
M2 – General Manufacturing District
AG – Special Aggregate District

At the time that the study was completed, the Town of Cheektowaga did not have an accurate inventory of land area within each zoning district; therefore, areas within each zoning district were determined from the Town Zoning Map (1992). The approximate area throughout the entire town, excluding the Villages of Depew and Sloan, of each of the aforementioned zoning categories is as follows:

| Zoning District Category | Area (acres) |
|---|---|
| Residence | 8,130 |
| Business | 4,730 |
| Manufacturing | 3,440 |
| | 16, 300 |

As reflected by these figures, the predominant land use in the Town, in terms of zoned acreage, is residential, which is approximately 50% of the total; industrial and manufacturing use is approximately 21%; and commercial and retail land use is approximately 29%. The project site, which is the only land within the AG district, amounts to approximately 1% of the total land in the Town of Cheektowaga.

As reflected by the 1992 Town of Cheektowaga Zoning District Map a band of land zoned for manufacturing use bisects the Town from the southwest to the northeast. Further review of this map reveals that various zoning districts appear to be dispersed throughout the remainder of the Town, with commercial districts primarily occurring along major roadways and residential districts of varying types and sizes occurring in all four quadrants of the Town.

The Greater Buffalo International Airport, which is zoned CF, is situated in the northeast corner of the Town and is surrounded by a number of districts ranging from manufacturing on the east to residential on the west. Other areas of note within the Town include a large area of commercially zoned land occurring near Exit 52 of the New York State Thruway, in the vicinity of the Walden Galleria Mall and Union Consumer Square complexes, and a grouping of cemeteries zoned CF in the northwestern portion of the Town. Other lands zoned CF include a municipal park system which encompasses numerous small community parks spread throughout the Town, and several large public parks, including the Stiglmeier Park/Dr. Victor Reinstein Woods Nature Preserve complex located in the southeastern portion of the Town.

The aforementioned band of industrially zoned land extends across the central portion of the Town and into the Village of Depew, and contains Walden Avenue, Broadway and three railroad lines. The project site is located within this band. Zoning within this corridor consists primarily of M1, M2 and AG districts, as well as some business districts, including C, CM, CF, and MS. Only one small residential district occurs within this corridor, along Wallace and Lemoine Avenues between Harlem Road and the New York State Thruway. This corridor is zoned primarily M-1 for light industrial use within the Village of Depew, although minor areas zoned M-2 and C-2 for heavy industrial and shopping center, respectively, do exist.

Although business districts occur along portions of the northern and southern margins of this industrial band, and function as a transition zones in these areas, much of the land situated adjacent to this band is residentially zoned. Extensive residential districts occur to the north and south of the central industrial band.

The Town of Cheektowaga zoning law and zoning map are available at the Town offices, located at 3301 Broadway.

4.2.1.1.2 Study Area

The study area consists of approximately 3,750 ± acres, and contains a mixture of different zoning districts occurring within the Town of Cheektowaga and Village of Depew (See Figure 9). Twelve zoning districts lie within the portion of the study area occurring within the Town of Cheektowaga, including: Residential District (R); Neighborhood Services District (NS); Community Facilities District (CF); Residential Mobile Home District (RMH); Apartment District (RA); Retail Business District (C); Residential Senior Citizen Housing District (RSC); General Commercial District (CM); Light Manufacturing District (M1); General Manufacturing (M2); and Motor Service District (MS). A thorough description of each of the above districts can be found in the *Zoning Law of the Town of Cheektowaga* (May, 2004).

The portion of the study area that lies within the Village of Depew also contains a mixture of zoning districts, including: Multi-family Residential (R-2); General Commercial (C-1); Shopping Center (C-2); Land Conservation (LC); Light Industrial (M-1); and Heavy Industrial (M-2). These districts are fully described in the *Village of Depew Zoning Law* (2001). For the purpose of this study, the Village of Depew zoning classifications listed above were considered to be analogous to the following Town of Cheektowaga districts, and hereinafter are included in the discussions pertaining to the latter districts:

| Village of Depew District | Analogous Town of Cheektowaga District |
|---|---|
| R-2: Multi-family Res. | R: Residence |
| C-1: General Commercial | CM: General Commercial |
| C-2: Shopping Center | C: Retail Business District |
| M-1: Light Industrial | M1: Light Manufacturing |
| M-2: Heavy Industrial | M2: General Manufacturing |
| LC: Land Conservation | N/A (No Corresponding District) |

The approximate amount of land within each of the zoning districts occurring within the study area is presented below:

| Zoning District | Area (Acres) |
|---|---|
| Residence (R) | 1,010 |
| Apartment (RA) | 140 |
| Senior Citizen Housing (RSC) | 10 |
| Residential Mobile Home (RMH) | 50 |
| Neighborhood Service (NS) | 60 |
| Retail Business (C) | 140 |
| General Commercial (CM) | 110 |
| Motor Service (MS) | 40 |
| Community Facilities (CF) | 710 |
| Light Manufacturing (M1) | 1,190 |
| General Manufacturing (M2) | 5 |
| Special Aggregates | 162 |
| Land Conservation | 125 |

As reflected by these figures, the two most prevalent zoning categories occurring within the study area are industrial/manufacturing (including special aggregates) and residential. Approximately 36% of the study area falls within the industrial/manufacturing zoning category, while residential districts comprise approximately 32% of the study area. The CF district, which includes Stiglemeier Park and the Dr. Victor Reinstein Woods Nature Preserve, occupies approximately 19% of the study area, business districts occupy approximately 9% of the study area, and the remaining 4% of the study area consists of land zoned LC. The latter district denotes areas in the Village of Depew where substantial land development is prohibited, and contains an inactive hazardous waste site referred to as the Old Reclamation Landfill.

Existing zoning patterns in the study area are dominated by the two most prevalent zoning categories, industrial/manufacturing and residential, which are separated by an imaginary line that bisects the study area from southwest to northeast. This line is the southern margin of the industrial band that extends

across the town and contains Walden Avenue, Broadway and the three railroads. This line generally parallels Como Park Boulevard to the west of Bellevue, and follows Cayuga Creek to the east of Bellevue. The majority of the land occurring to the north of this line is zoned industrial/manufacturing (e.g., M1, M2 and AG), while the land to the south is zoned primarily residential (e.g., R, RA, and RMH). Lands zoned CF occur in both the northern and southern regions of the study area, as do lands zoned for business purposes. The LC district occurs in the northern portion of the study area. Additionally, lands zoned NS occur within the southwestern portion of the study area.

4.2.1.1.3 Project Site

The project site encompasses approximately 219 acres and is zoned AG. The isthmus which occupies approximately 40 acres is located within the boundaries of the project site and is also zoned AG.

The purpose of the Special Aggregates District (AG) is to provide areas for the excavation or quarrying of aggregates and the treating and processing of such aggregates.

4.2.1.2 Land Use

4.2.1.2.1 Town of Cheektowaga

Based on review of aerial photographs and field verification, the general configuration of land uses within the Town of Cheektowaga is consistent with the Town Zoning Map. With the exception of the industrial/manufacturing usage that extends along the corridor containing Walden Avenue, Broadway and the three railroad lines, and commercial uses occurring along major roads, no intentional or orderly pattern of land use is discernable in the Town of Cheektowaga. This may be attributed to the town being 85% developed when the 1992 update to the comprehensive plan was adopted and the time elapsed since the plan's initial 1968 planning study. (See Section 4.2.1.3.1).

Although land use is generally mixed throughout the town, a relatively well defined band of industrial/manufacturing land use runs southwest-northeast through the town along the corridor containing Walden Avenue, Broadway and the three railroad lines. Industrial/Manufacturing use also occurs in a concentrated area situated east of the Greater Buffalo International Airport. Commercial land use, which includes commercial activity, automotive uses, retail service users, and retail stores, is generally located along the major roads, including Harlem, Union, Dick and Transit Roads, as well as Genesee and William Streets. More concentrated commercial use also occurs in the vicinity of Exit 52 of the New York State Thruway, in the Galleria Mall and Union Consumer Square area.

Residential use occurs primarily to the north and south of the industrial band described in the preceding paragraph, with individual communities dispersed throughout the Town. A number of small public Town parks and recreation facilities, including Dingens, North Creek, Knob Hill, Firemans, Kelly, Eiffel, Dartwood, and Nokomis Parks as well as several unnamed parks are distributed throughout the Town. Several larger public parks are also located in the Town, including the Rehm Road Park in northeastern Cheektowaga, the Town Park on Harlem Road, and Stiglmeier Park in southeastern Cheektowaga. The latter park is the largest of the Town parks and is situated adjacent to the Dr. Victor Reinstein Woods Nature Preserve operated by New York State.

4.2.1.2.2 Study Area

Field reconnaissance of the study area and the review of recent aerial photography were performed to determine the configuration of existing land uses in this area, as well as to develop a detailed land use map for the study area. As depicted by Figure 10, a variety of land uses, ranging from residential to heavy industrial, occurs within the study area. The study area is bisected by an imaginary line that trends southwest to northeast, and generally parallels Como Park Boulevard and Cayuga Creek to the west and east of Bellevue, respectively. This line demarcates the southern boundary of the industrial/manufacturing corridor that extends across the Town of Cheektowaga and Village of Depew. To the north of this line, land use is primarily industrial, manufacturing and commercial. Residential and recreational land uses dominate the area to the south of this line.

The northern band of industrial, manufacturing and commercial land use contains Walden Avenue and Broadway, both of which are functionally classified as principal arterials, as well as three active rail lines. Uses occurring within this portion of the study area include the following industrial/manufacturing facilities:

- American Precision Industries – manufacturer of heat exchangers
- Gibraltar Strip Steel Corp. – manufacturer of cold rolled strip steel and strapping
- Jamestown Containers Inc. – manufacturer of corrugated boxes and packaging supplies
- FN Burt – Fine packaging and folding boxes
- Robinson Knife Co. – machining of knife blades
- Former Smith Metal Arts/McDonald PRD – manufacturer of office accessories
- Derrick Corporation – mfg. of high speed screening equipment for raw/finished materials
- Cooper Turbocompressor Division – manufacturer of compressors

- Schultz Construction and Demolition (C&D) Debris Landfill – closed landfill
- Browning Ferris Industries – waste transfer station
- Land Reclamation – closed landfill
- Old Land Reclamation – inactive landfill
- Buffalo Crushed Stone – limestone quarry and asphalt production
- Gateway Recycling – ferrous metals recycler
- American Axle & Manufacturing – manufacturer of driveline systems and chassis for trucks and large vehicles
- Robert James Sales – corrosion resistant piping products
- 21st Century Electronics – Automated Machinery Specialists

Also present within this portion of the study area are state, county and municipal facilities including a New York State Department of Transportation (NYSDOT) maintenance facility, Erie County Water Authority and Fire Academy facilities, and Town of Cheektowaga Highway Department garage, Town Hall, Court, and Police Department headquarters.

Commercial land use is dispersed throughout the northern portion of the study area, but primarily occurs along Walden Avenue, Broadway and Union Road. This includes several large commercial areas such as the area to the south of the Walden Galleria Mall (e.g., Wegmans Plaza, Kmart, etc.) and the area in the vicinity of the Walden Avenue/Dick Road intersection (e.g., Marine Midland Mortgage Co., etc.).

Limited residential use is found in the northern portion of the study area, with residences occurring to the north of Como Park Boulevard on Homewood and Center Avenues; along Broadway and Old Broadway; north of Broadway on Schlenker and Schuster Avenues; east and west of Indian Road just to the north of Bellevue; and on Chateau Court along the eastern margin of the study area. Many of these residences are situated immediately adjacent, or in close proximity, to industrial or manufacturing uses that dominate this area.

Undeveloped land occurs discontinuously around the western and southern sides of the existing quarry, and to the north and east of Indian Road, between the existing quarry and the closed construction and demolition (C&D) debris landfill. With the exception of some undeveloped land situated within the rail corridor, no other substantial areas of undeveloped land occur within the northern portion of the study area.

Land use in the southern portion of the study area, south of Como Park Boulevard and Cayuga Creek to the west and east of Bellevue, respectively, is dominated by residential and recreational uses. Residential use occurs along Como Park Boulevard and Rowley Road to the east of Bellevue, and along

Borden, Bennett and Losson Roads. Single family residential subdivisions occur between Union Road and the NYS Thruway, north and south of Rowley Road, and north of Losson Road. Additionally, the Parkside Village Mobile Home community is located north of Losson Road, and the Williamstowne Village apartment complex is located just to the northwest of the Union Road/William Street intersection. This portion of the study area also contains Stiglmeier Park and the adjacent Dr. Victor Reinstein Woods Nature Preserve. Together, these areas constitute the largest area dedicated to recreation/open space within the Town of Cheektowaga.

Other uses within the southern portion of the study area include commercial and institutional uses. Commercial uses, such as the Appletree Business Park, occur primarily along Union Road. Institutional uses include The Center for Hospice and Palliative Care located south of Como Park Boulevard, and the Maplewood Health Care Center located south of Bennett Road.

East of Bellevue, Cayuga Creek provides the margin between the northern corridor of industrial, manufacturing and commercial use and the area of residential and recreational uses to its south. On the northern side of the creek lie the closed Schultz C&D debris landfill, closed municipal/industrial waste landfill (Land Reclamation), and the inactive landfill (Old Land Reclamation). Single family residential subdivisions and undeveloped land are situated directly to the south of the creek.

West of Bellevue, the margin between the northern and southern study area zones is not as well defined, but generally parallels Como Park Boulevard and extends westward to the NYS Thruway. A limited number of residences are located north of Como Park Boulevard and on Center and Homewood Avenues, as are several churches and restaurants. These properties border industrial uses to the north, including Gateway Recycling and the existing BCS quarry. Land use along the south side of Como Park Boulevard is a mixture of commercial, institutional, residential, community facilities and industrial. These uses include the Appletree Business Park, Hospice, residences along Hawthorne, Homewood and Center Avenues and Vita Boulevard, Town of Cheektowaga Bellevue Fire Company, and the Suit-Kote asphalt storage facility. These properties generally border residential or recreational areas to the south, and are considered to represent a land use transition zone between them and the industrial/manufacturing area to the north.

#### 4.2.1.2.3 Project Site

The isthmus is located on the project site between the existing east and west quarry basins and consists of approximately 40 acres. The majority of the isthmus is currently occupied by existing support buildings, quarrying equipment, the stone-crushing plant and asphalt plants. The isthmus is bounded to the north

by the railroad corridor; to the south by a commercial building that is owned by BCS and occupied by the Hilltop Day Care and Learning Center and to the east and west by existing quarry basins.

#### 4.2.1.3 Existing Town Comprehensive Master Plan

##### 4.2.1.3.1 General Discussion

Comprehensive planning activities play an important role in directing the future development of a community by identifying the needs on the community and by establishing goals and objectives for future development and preservation of valued assets. The comprehensive planning process also provides the residents of the community with an opportunity to share their vision of what they want the community to become and provide guidance for local government officials. The implementation a comprehensive plan has been shown to be an effective way of achieving meaningful and desired change in a steady, incremental manner within many communities.

The Town of Cheektowaga has undertaken two comprehensive planning studies. The first was in 1968 and the second in 1991. The 1991 Comprehensive Master Plan (CMP) was formally adopted in 1992 and the Town's zoning law was revised to operate in accordance with the proposed land uses and zoning districts identified in the 1991 CMP. The CMP and zoning laws are available for review at the Town of Cheektowaga offices at 3301 Broadway.

The CMP noted that the Town of Cheektowaga had developed an urban character as a result of its proximity to the City of Buffalo and the presence of transportation infrastructure (i.e., the Buffalo Niagara Airport; Thruway links to limited access highways such the I-190, 290, 219 and 400 expressways; and railway corridors). The Villages of Sloan and Depew are located within the Town of Cheektowaga; however they were not included in the CMP.

The CMP developed an inventory and analysis of land uses within the Town which revealed that as much as 85% of the Town of Cheektowaga was developed. The predominant land use within the Town was residential (approximately 55%), followed by industrial land use (approximately 25%), commercial and retail land use (approximately 20%). Quarries for special aggregate production accounted for less than 1% of developed area, while the remaining land uses include parks, playgrounds, schools and cemeteries. The CMP also identified key development sectors, discusses community wide improvements and, finally, discussed goals and objectives.

#### 4.2.1.3.2 Goals and Objectives

The vision for the Town of Cheektowaga identified in the CPM is that of a complete town, which has the capacity to accommodate growth while preserving open space and creating sufficient recreational facilities for a growing population. This vision includes providing residents with a variety of housing types, opportunities for employment and business, public facilities, and places for recreation. The plan identified goals and the actions or conditions necessary to achieve those goals. These goals were presented within the context of the following categories:

- Land Use
- Transportation
- Government Services
- Visual Resources
- Cultural Resources
- Open Space and Recreation
- Business and Employment
- Housing
- Environmental Resources

#### 4.2.1.3.3 Target Planning Sectors

The CMP targeted six discrete geographic areas within the community for which physical development schemes and policy recommendations were identified. The CMP included broad based community-wide planning concepts and sector specific objectives that were intended facilitate the achievement of goals identified as a result of the CMP process. These discrete geographic areas were identified as key target sectors, and represented the areas within the Town that have experienced transitions in land use, or were large undeveloped areas subject to development pressures. The specific target sectors that were identified in the CMP were as follows:

- Genesee Street Sector (from Dick Road easterly to Sonwil Drive)
- Harlem Road Sector (from Genesee Street south to Walden Ave.)
- Walden Avenue Sector (from the Buffalo city line to Dick Road)
- Railroad Lands Sector (from the Village of Sloan easterly to Union Road)
- Union Road Sector 1 (from French Road north to Walden Avenue)
- Union Road Sector 2 (from Walden Avenue north to the Kensington Expressway)

For each of these key target sectors, the CMP provided a detailed discussion, which characterized existing land use patterns, identified development

constraints and opportunities, and established planning objectives and policies/implementation procedures. None of these sectors occur on or immediately adjacent to the project site.

#### 4.2.1.3.4 Community-Wide Planning Initiatives

The community-wide initiatives identified in the CMP included: vacant land; development constraints/environmental features; transportation; civic, public and governmental facilities; land use controls; and utilities. The project site was graphically identified in the CMP.

The proposed action's compatibility with these community-wide planning initiatives is discussed in Section 5.2.1.3.

### 4.2.2 Traffic

In conjunction with a re-zoning application submitted by BCS to the Town of Cheektowaga, a Traffic Impact Study was completed by EMS Consulting in 1997. The resulting report was appended to the Application for Zoning Reclassification submitted to the Town in July 1997, and characterized existing road conditions, traffic volumes, intersection operations and accident histories in the project vicinity. This report concluded that available sight and stopping distances for the quarry access road on Como Park Boulevard exceed desirable New York State Department of Transportation criteria. Additionally, according to the 1997 study, accident records for Como Park Boulevard in the vicinity of the quarry indicated that accident rates were well below the state-wide average for a two-lane, undivided suburban highway.

The study is provided in Appendix W.

### 4.2.3 Noise

The potential impact of noise generated as a result of the proposed action has been identified as a concern. Specific concerns identified during scoping for the project included increased community noise levels from routine, daily quarry operations and physical damage to nearby structures from blasting-generated air over pressure. These concerns were the subject of two separate studies. The first, conducted by Angevine Acoustical Consultants, Inc., focused on potential impacts to community noise levels from daily quarry operations, including rock drilling, on-site loading and transport, rock crushing and screening and asphalt production. The second study, conducted by Vibra-Tech Engineers, included an analysis of air overpressure levels generated by blasting events within the existing quarry, which occur once every 8-days. The following subsections characterize existing conditions with respect to community noise and air overpressure levels.

#### 4.2.3.1 Daily Operational Noise Levels

To address the concerns about noise-related impacts from daily quarry operations, Angevine Acoustical Consultants, Inc., analyzed current noise levels and modeled the noise impacts of the proposed permit modifications.

The objectives of the noise assessment were to determine if the proposed modifications will generate any significant additional noise and to verify that the predicted future noise levels will comply with applicable local noise level limits. The noise assessment consisted of:

- Sampling of background levels (ambient) at representative sensitive receptors surrounding the quarry;
- Collecting and reviewing long-term background noise logging measurements at locations on the quarry boundary adjoining residential properties;
- Collecting source measurements of mining and processing operations; and
- Modeling the future community noise environment using a computerized predictive program.

The sampling and logging were completed in the summer of 2005. The Noise Impact Assessment report, which was issued in December 2005, is included as Appendix X.

The following is a summary of the assessment of current site and community noise levels, including survey methodologies and findings. Potential impacts to community noise levels from the proposed action are described and analyzed in Section 5.2.4.

##### 4.2.3.1.1 Noise Criteria

For the proposed action, the NYSDEC has guidelines and the Town of Cheektowaga has an ordinance that must be considered in evaluating the impact of the noise predicted to be generated by the processing equipment relocation and isthmus mining activity.

NYSDEC Guidance

The NYSDEC has established guidelines to evaluate the sound levels and characteristics generated from proposed or existing facilities. The policy, “Assessing and Mitigating Noise Impacts” (DEP-00-1), which is available at the NYSDEC office, provides guidance to NYSDEC staff for determining the acceptability of the sound pressure level (i.e., noise) associated with a proposed action by examining potential noise level increases.

The acceptability of an increase is based on quantitative thresholds and human reactions to those thresholds. The associated significance of changes in noise levels is described in the following table, which reflects the values provided in the NYSDEC guidance.

**TABLE 4**
**THRESHOLDS FOR SIGNIFCANT**
**SOUND PRESSURE LEVEL INCREASE**

| Increase (dB) | Significance |
|---|---|
| 0-3 | Should have no appreciable effect on receptors. |
| 3-6 | Potential for adverse noise impact only in cases where the most sensitive of receptors are present. |
| Over 6 | May require closer analysis of impacts potential depending on existing noise levels and character of surrounding land use and receptors. |
| ~10 | Perceived doubling of noise level. Deserves consideration of avoidance and mitigation in most cases. |

The NYSDEC policy guidelines also describe reactions to changes in noise levels, as provided in the following table.

The policy states that it is not the NYSDEC's intent of the guidance to require decibel limits to be established for operations where such limits are not required by regulation. The guidance is provided to assist in the assessment of the significance of impacts as required by SEQRA. Where significant impacts are identified, however, reasonable and necessary measures to mitigate noise can be required of the applicant.

**TABLE 5**
**HUMAN REACTION TO**
**INCREASES IN SOUND PRESSURE LEVEL**

| Increase (dB) | Acceptability / Subjective Reaction |
|---|---|
| Under 5 | Unnoticed to tolerable |
| 5-10 | Intrusive |
| 10-15 | Very Noticeable |
| 15-20 | Objectionable |
| Over 20 | Very Objectionable to Intolerable |

Town of Cheektowaga

The Code of the Town of Cheektowaga, Chapter 166 (the Noise Law), which is available at the Town offices, establishes maximum permissible sound pressure levels based on land use categories. The land use applicable to the source of the sound and the land use applicable to the receptor of the sound determine the maximum permissible level.

The Como Park Quarry is in a Special Aggregate (AG) District. The AG zoning designation is associated with manufacturing districts in the Zoning Law of the Town of Cheektowaga. Assessment of noise impacts for the proposed action is therefore based on limits associated with the business and manufacturing source land use category. Those limits are:

- For residential receptors - 65 dBA in the daytime (7:00 am - 11:00 pm) and 50dBA in the nighttime (11:00 pm – 7:00 am);
- For business receptors – 65 dBA at all times; and
- For manufacturing receptors – 75 dBA at all times.

4.2.3.1.2 Existing Noise Levels

The community noise survey was completed using a portable Casella CEL Model 593 sound-level analyzer. The analyzer was programmed to continuously record one-second averages of ambient sound levels during representative sampling periods ranging from five to fifteen minutes. Sound levels that were recorded included the overall minimum, maximum and average. These were measured using an A-weighting and slow-metering response, which are the most commonly used descriptors of environmental noise. To provide additional background information, sound levels were simultaneously measured at individual octave-band frequencies.

Noise levels were measured at eleven representative locations on several occasions during representative portions of the daytime weekday hours, during normal hours of quarry operations and after close of operations. The survey locations were selected to be representative of various receptor categories. They reflect residential, business and manufacturing land-use categories.

To obtain additional noise level data, noise level loggers were installed at four boundary locations and operated continuously for a number of days. The loggers were Metrosonics Model db3080. They were programmed to continuously record one-minute averages of ambient sound levels during sample periods that typically ran for three days. Sound levels that were recorded included the overall minimum, maximum and average. All were measured using A-weighting and slow metering response. The loggers were installed along the project site's

southern boundary opposite Center Avenue, at Holy Trinity Church, at 550 Como Park Boulevard and along the eastern boundary opposite Second Street.

The sound levels from the community survey are provided in the following table.

**TABLE 6**
**BACKGROUND COMMUNITY SOUND LEVELS**
Background Sound Levels in Community
Average A-Weighted (dBA), 5-15 Minute Sample Period

| | **Survey Date** | Tue July 19 2005 | Fri July 29 2005* | Fri July 29, 2005 | Wed Aug 10 2005 | Mon Aug 15 2005 | Tues Aug 9 2005* | Tues Aug 9 2005 |
|---|---|---|---|---|---|---|---|---|
| **Survey Location** | **Approx. Start Time** | 1000-1130 | 0950-1200 | 0950-1200 | 1020-1150 | 1250-1410 | 1600-1840 | 1600-1840 |
| North End of Center Avenue | | 56.1 | 61.0 | 56.2 | 55.7 | 55.2 | 52.6 | 52.6 |
| Hilltop Day Care Center | | 60.3 | | 58.8 | 58.0 | 54.4 | | 54.9 |
| 550 Como Park Boulevard | | 57.4 | | 57.8 | 58.7 | 56.8 | | 59.6 |
| 43 Center Avenue | | 53.6 | | 53.4 | 55.0 | 52.7 | | 54.0 |
| Ukrainian Orthodox Church | | 54.7 | | 54.0 | 53.7 | 54.3 | | 56.4 |
| Mitchell Hospice | | 55.9 | 61.6 | 56.4 | 56.1 | 54.4 | | 55.6 |
| West end of First Street | | 56.6 | | 57.2 | 60.6 | 55.4 | | 52.4 |
| West End of Second Street | | 58.6 | 60.7 | 59.6 | 60.5 | 58.5 | | 52.7 |
| 44 Rowley Hollow | | 49.4 | | 51.2 | 50.5 | 48.6 | | 52.4 |
| Old Indian Road at Broadway | | 69.1 | | 70.4 | 69.4 | 70.1 | | 71.5 |
| Senior Citizens Center of Broadway | | 61.1 | | 62.3 | 61.2 | 59.3 | | 60.4 |

* Includes direct by-pass of traffic on local street or parking lot.

The survey indicates that the average sound levels measured at each receptor on different days during operational hours are largely consistent and vary only a few decibels by daytime hour. The assessment states that this is because background levels along a majority of the facility boundary are largely influenced by noise contributions from nearby traffic. Direct passes of vehicles on the local street or parking lot opposite the survey location were found to briefly increase the background levels and affect the average levels by a few decibels or more, as illustrated by the July 29 readings.

Mining and processing operations were not observed to noticeably affect the background noise levels at most receptor locations. Daytime noise levels obtained during quarry operational hours are similar to the levels measured during non-operational hours, as represented by August 9. The study attributes this to the predominance of nearby traffic sources.

General observations from the assessment, including the noise level sampling that occurred during regular quarry operations, are that:

- At receptors located south of the west basin, noise generated by the current mining operations in that basin is only partially audible and noise from the processing operations is mostly inaudible.
- At receptors located south of the east basin, noise generated by the current mining operations in that basin is typically inaudible due to the shielding by the quarry wall and extensive earthen berms. Noise from vehicles entering the site and processing operations is minimally audible.
- At receptors located southwest and north of the facility, quarry operations are inaudible as a result of masking by dominant local traffic sounds.
- At receptor points that adjoin BCS's east boundary on First and Second Streets, where BCS owns several residential properties, and at nearby receptors on Indian Road, the quarry processing operations are generally perceptible on a continuous basis in between traffic passes. The small number of residences on First and Second Streets are in direct line-of-sight to the processing operations due to a minimal vegetative shielding.

The community noise assessment concluded the following with respect to existing community noise levels:

- Noise levels in the community surrounding the quarry are largely influenced by traffic on local roadways and only partially by quarry equipment and operations. Traffic noise component levels were typically several decibels higher than quarry source levels, with limited exceptions. The lower quarry-generated levels are the result of shielding from vegetation, terrain contours and berms.
- The measured community noise levels typically do not exceed the limits of the Code of the Town of Cheektowaga.

#### 4.2.3.2 Blasting Noise

##### 4.2.3.2.1 Background

An airborne shock wave, that may or may not be audible, caused by burden movement or the release of expanding gases into the air as a result of the detonation of explosives is referred to as air overpressure or airblast. Air overpressure can cause concern and annoyance in people who are exposed to it, as well as property damage. Actual structural damage due to airblast is usually minor and is very rare. The first damage from airblast is typically broken window glass, with large plate-glass windows being the most prone. Cosmetic damage (e.g., cracking) may occur in conjunction with extensive window glass damage, but structural damage is very rare. Human response to air overpressure includes concern about damage and annoyance, which is subjective.

#### 4.2.3.2.2 Airblast Criteria

Office of Surface Mining, Reclamation and Enforcement (OSMRE) regulations prohibit airblasts from exceeding 133 dB (±3 dB) at any private or public structures using a flat response measuring system with a lower frequency limit of 2 Hertz (Hz) or lower. This limit is based on the minimal probability of superficial damage to residential type structures and also considers the subjective human response. The United States Department of the Interior Bureau of Mines (the Bureau) has indicated that levels exceeding 120 dB will produce annoyances from rattling and fright in some residents, and levels of 134 dB will produce annoyance in 10% of residents experiencing these types of disturbances. The Bureau research is further discussed in the Vibra-Tech November 30, 2000 report, entitled "Measurement and Analysis of Blast Induced Ground and Air Vibration in the Vicinity of the Buffalo Crushed Stone Quarry, Cheektowaga, New York on November 30, 2000 Using IsoSeismic RSVP and Vibra-Map Techniques", which is available for review at the BCS office.

#### 4.2.3.2.3 Existing Airblast Levels

In November 2000, Vibra-Tech Engineers deployed 165 full waveform time history seismometers that were equipped with microphones to measure air overpressure in the area surrounding the quarry. A total of five separate test blasts were detonated at different locations within the quarry. Utilizing the data from the seismometers, peak overpressure levels in the area surrounding the quarry were determined for the five blasts. In no case did air overpressure levels from these blasts exceed the recommended limit of 133 dB at any locations beyond the quarry boundary. In fact, maximum air overpressure levels at residences and business located immediately adjacent to the quarry were calculated to be less than 124 dB for all five blasts. The Vibra-Tech study is available for review at the BCS office.

Although the magnitude of the five test blasts discussed in the preceding paragraph was much less than that of production blasts at the quarry, blast-event monitoring at buildings near the project site during production blasts at the quarry conducted by Vibra-Tech between 2000 and the present has not detected any exceedance of the regulatory limits, and no damage to structures in the site vicinity has been documented in conjunction with blasting at the existing quarry. The monitoring network consists of two mobile seismometers and two permanent seismometers.

Airblast control measures have been effectively used at the existing quarry. These control measures include:

- Avoiding blasting during unfavorable weather conditions (such conditions can magnify the effects of air overpressure);

- Proper stemming of drill holes, which is the filling of the uppermost portion of the blast hole with gravel filtered to a certain size range, to an adequate depth;
- Proper burden and spacing;
- Re-orienting away from populated areas any high free face;
- Appropriate delay; and
- Blasting during periods of high human activity (e.g., the noon hour) rather than during customary quiet times.

### 4.2.4 Visual and Aesthetic Resources

The project site is located within an area that contains a number of commercial/industrial type facilities and an active railroad line. The area includes three closed landfills to the northeast, a junkyard to the west, an asphalt storage plant to the south and a commercial office complex to the southwest. Additionally, residential homes are located to the south and east of the project site.

The project site is occupied by two active quarry basins situated on the east and west sides of the isthmus. Located on the isthmus are crushing and asphalt plants as well as several other facility support buildings, varying sized piles of stone and stone products and roadways associated with facility operations. The majority of the project site is hidden from the surrounding area because it is below the surrounding grade and the vegetation and landscaping that exist around the project site. Also surrounding the project site are several earthen berms, including berms at the northern terminus of Homewood and Center Avenues, as well as the one at the southeastern corner of the existing quarry. These berms eliminate some of the potential visual receptors by providing additional screening of the project site. Figure 11 illustrates the location of all of the berms currently present on the project site. The features of the project site that are currently observable from several roadways surrounding the project site as well as from businesses and residences include the scale house at the entrance to the project site, as well as portions of the asphalt and crushing plants and stone piles.

Photographs were taken at various locations surrounding the project site to illustrate existing views of the project site. The photographs, which are keyed to a site map, are included as Appendix Y. These photographs were taken during the winter of 2004 / 2005 to illustrate the most unobstructed views of the project site (i.e., when there was minimal vegetation to obstruct views of the project site).

### 4.2.5 Cultural Resources

The current attributes of the project site considered in the determination are that no structures over 50 years old exist on or adjacent to the isthmus, the site has been mined since 1929, the isthmus has been extensively disturbed, the overburden has been removed and the bedrock has been exposed.

The New York State Historic Preservation Act of 1980 established historic preservation as a matter of public policy for the State of New York The legislation was intended to satisfy the requirements of the National Historic Preservation Act of 1966, which mandated the establishment of a state-level mechanism to inventory and protect sites, buildings, structures or objects of historic or cultural significance. The New York State Historic Preservation Act provides the statutory authority for the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) to administer the national program at the state-level, under the regulatory authority of Section 14.09 of the New York State Parks, Recreation and Historic Preservation Law. The NYSOPRHP Field Services Bureau maintains the State Register of Historic Places, the official lists buildings, structures, areas or objects significant in the history of the nation, state and the community.

The New York State Environmental Quality Review Act (SEQRA) provides a set of uniform regulations by which projects, and/or actions are assessed within the context of their potential impacts to historical and cultural resources. In cases where a New York State agency is involved in the proposed action (i.e., a permit modification by the NYSDEC Division of Mineral Resources), it is appropriate to consult with NYSOPRHP for an opinion of a proposed project or actions potential impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

Consultation of the NYSOPRHP on-line resources (http://nysparks.state.ny.us/) revealed no sites within a mile of the project site that are on, or have been nominated for the National Register; however, the project site falls within an area identified as being culturally and/or architecturally significant.

On behalf of Buffalo Crushed Stone, Inc., TVGA submitted a Project Review Cover Form and associated information pertaining to the proposed permit modification to the NYSOPRHP Historic Preservation Field Service Bureau for their review during July 2005 in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09. Following review of the submittal, the NYSOPRHP Field Services Bureau determined that the project would have no impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places. Relevant correspondence to and from the NYSOPRHP is presented in Appendix Z.

### 4.2.6 Socioeconomic Considerations

#### 4.2.6.1 Quarry Products and Tax Revenues

The existing quarry produces numerous products that satisfy state and federal specifications, including crushed stone; bituminous and ready-mix cement concrete aggregates; road construction base materials; and rip-rap revetment stone. These materials are required for numerous public works and private projects throughout the region.

Furthermore, the existing quarry is one of only three sources located in New York State Department of Transportation (NYSDOT) Region 5 that are capable of producing stone products that satisfy the NYSDOT's special aggregate quality standards for Type 1 aggregates. NYSDOT Region 5 encompasses Niagara, Erie, Chautauqua and Cattaraugus Counties. The NYSDOT requires the use of asphalt containing Type 1 aggregates in all road construction and repair projects for safety reasons. Asphalt containing Type 1 aggregates provides more friction on the surface, enabling better vehicle handling and stopping in wet conditions.

Buffalo Crushed Stone, Inc., currently employs about 30 full-time personnel at the project site. The direct economic benefits associated with the quarry are:

- The local economic benefit of continued payment of wages, taxes and benefits to employees at the Como Park Facility, which currently amount to $1,700,000 annually (2004);
- Sustained revenues to the local community in the form of school and property taxes in the amount of $235,000 annually (2004); and
- The local economic benefit of sales taxes associated with annual purchases and expenditures for outside goods and services in the amount of approximately $7,125,000.

In addition to those directly employed by Buffalo Crushed Stone Inc., the operation of the project site creates indirect employment as well. The most notable indirect employment includes local truck drivers involved in the transport of products generated at the quarry to local construction sites.

#### 4.2.6.2 Residential Property Values

Residential homes are located in the vicinity of the project site. Area residents have raised concerns about the potential economic impacts associated with their homes' proximity to the quarry. To address these concerns, a professional real estate appraiser completed in September 2005 a Residential Property Value Impact Study (Appendix AA) in accordance with the requirements of the Uniform Standards of Professional Appraisal Practice of the Appraisal Foundation and the Appraisal Institute.

The sample data for the Residential Property Value Impact Study was collected from a representative study area within the Town of Cheektowaga that included residential, commercial and industrially zoned land. The study area encompassed approximately 6,720 acres of land bounded to the north by George Urban Boulevard, to the south by French Road and the to west and east by Union Road and Transit Road respectively. Within the study area the appraiser identified First and Second Rings in which the sample data was collected for the performance of the Residential Property Value Impact Study.

The establishment of the First and Second Rings allowed the appraiser to analyze three individual zones within the rings in order to compare zones to each other. The First Ring is generally closer to the project site than the Second Ring. These zones were established from a locational standpoint based on where they are situated relative to the project site. Additionally, these zones were established by the appraiser for use in this study and do not reflect or have any correlation with property value.

The three individual zones established within the First Ring are identified below:

- **Zone 1** is located just south of the project site and includes a portion of Como Park Boulevard, which runs along the northern section of the zone, Union Road which is the western line, and Bennett Road, which runs east off of Union Road, and curls north were it ends at Como Park Boulevard.
- **Zone 2** is located east of the project site and includes a portion of Como Park Boulevard, which runs along the southern section of the zone, beginning at Indian Road, and extending east to Borden Road. Borden Road is the eastern boundary of this zone running north to Broadway Street. Broadway Street, and Indian Road both act as the northern and western boundaries, running south back to Como Park Boulevard.
- **Zone 3** is also located south of the project site off of Losson Road. This zone is accessed by Crabapple Lane and is bordered on the north and east by Stiglmeier Park.

The three individual zones established within the Second Ring are identified below:

- **Zone 1** is located southeast of the project site and is bound by Losson Road to the north, French Road to the south, Borden Road to the east and Union Road to the west.
- **Zone 2** is located northeast of the project site and is bound by George Urban Boulevard to the north, Walden Avenue to the south, Transit Road to the east and Dick Road to the west.
- **Zone 3** is located northeast of the project site and is bound by Gould Avenue to the north, Broadway Street to the south, Transit Road to the east and A Street to the west.

The sample data utilized in this study was collected from the Multiple Listing System, LandData Systems, the Town of Cheektowaga Assessors Office and a database maintained by the appraiser. The sample data collected from the First and Second Rings was categorized into current market sales and historical sales/resales. The resale information utilized in this study was gathered over the past 13 years (1992-2005). The current market sales and historical sales/resales collected from the First and Second Rings were analyzed to determine if market

appreciation achieved by homes near the project site is consistent with other portions of the study area. The appraiser indicated that the average marketing time within the Residential Property Value Impact Study area was estimated between 60 and 90 days.

Six homes, which included ranch, colonial, split-level and cape cod styles, were evaluated in the First Ring to determine the level of appreciation/deprecation. These six homes are well maintained and are considered to be typical of the zone. Four of the six homes demonstrated a positive annual appreciation rate of approximately 2%. Of the remaining two homes, one demonstrated an annual appreciation rate of 30.39% and one demonstrated a depreciation rate of 1.25%. The marketing time for these six resales ranged from 9 to 71 days, with an average marketing time of 34.6 days.

Ten homes, which included ranch, colonial, split-level and cape cod styles, were evaluated in the Second Ring and compared to the First Ring to determine the level of appreciation/deprecation and the similarities between the two zones. The six homes were considered to be well maintained and are typical of the zone. Seven of the ten homes demonstrated a positive annual appreciation rate of approximately 0.8%. One of the homes showed no appreciation/deprecation as it sold for the same price in 1992 and 2005. The remaining homes demonstrated an average depreciation rate of 0.44%. The marketing time for these ten resales ranged from 15 to 160 days, with an average marketing time of 53.6 days.

An analysis of current market sales was also performed within the Residential Property Value Impact Study area and included ten homes consisting of ranch, colonial, split-levels and cape-cod styles. The sales of these homes ranged in price from $117,250 to $170,000, which correlates to $56.37 to $114.24 per square foot with an average sale price of $139,815 or $84.28 per square foot, which is much higher than the Town of Cheektowaga median housing value of $81,800. The marketing time for these ten current market sales ranged from 15 to 66 days, with an average marketing time of 29.9 days. These ten homes were considered to be well maintained and are typical of neighborhoods within the study area.

Conclusions relative to the impact of the proximity to project site on property values, average marketing time, average listing price and buying decisions are presented in Section 5.2.7.1.

## 5.0 IMPACT ANALYSIS

### 5.1 Natural Resources

#### 5.1.1 Geology

Land preparation, mining and reclamation activities on the isthmus will permanently alter the topography of the land within the life-of-mine limits. Additionally, blasting on the isthmus has the potential to cause or increase fracturing in the surrounding bedrock. The following provides a discussion of these potential impacts and measures available to minimize or eliminate them.

The mining of the isthmus will alter the existing landscape by enlarging and connecting the two existing basins located within the boundaries of the project site. While unavoidable, the change in topography that will occur as a result of overburden and bedrock removal will not result in a new landform in the project area. Instead, it will be the joining of the two existing quarry basins to form a single larger quarry basin within the current boundaries of the project site. Furthermore, upon completion of mining of the isthmus, the site will be reclaimed in accordance with NYSDEC regulations such that it is suitable for a productive use. This will ensure that land affected by the quarry is restored to an acceptable condition. A revised Reclamation Plan specifying the means by which the site will be reclaimed, including such items as grading and slope treatment, disposal of refuse or spoil, drainage, and re-vegetation, was submitted with the application for the permit modification (See Appendix A).

Based upon its consistency with existing surface characteristics in the project area, and the prerequisite NYSDEC-approved Reclamation Plan, the change in topography associated with the mining of the isthmus does not represent a significant adverse impact. An evaluation of the visual impact associated with this change in topography is included in Section 5.2.5.

Lastly, impacts to the bedrock geology in the vicinity of the isthmus from blasting are not anticipated to be any different than those caused by blasting at the existing quarry, because blasting design and procedures will remain unchanged. In fact, impacts to bedrock geology, if any, should be less since mining of the existing quarry has removed bedrock to a depth of approximately 150 feet on the east and west sides of the isthmus. The lack of rock to either side of the isthmus means that vibrations will not be transmitted (through the “ground”) to the east or west. The energy will be dissipated by the air. Blasting at the existing quarry has not produced or enlarged any major fractures in the bedrock that immediately surrounds the quarry, as no prominent fractures are visible on the quarry faces or ledges immediately surrounding the quarry.

As discussed in Sections 3.4 and 5.2.3.4, BCS will continue to follow proper blast design procedures to minimize ground vibration beyond the quarry limits, a practice that has

proven successful based upon historical blast monitoring data. As such, no impacts to local bedrock geology are expected to result from blasting in the isthmus area.

### 5.1.2 Water Resources

#### 5.1.2.1 Groundwater

As described in Section 4.1.2.2.2, the proposed action is not anticipated to significantly affect groundwater flow due to the limited amount of water present in the bedrock. The east and west quarries act as discharge points for groundwater in the vicinity of the quarry, and the limited vertical recharge by precipitation also indicates impacts to groundwater flow are not expected. Because the impact on groundwater flow will be negligible, the mining operations on the isthmus will have no impact on the groundwater quality.

The mining of the isthmus also will not significantly increase the potential for naturally poor quality groundwater from deeper rock formations to move upward, mix with, and degrade the quality of groundwater in the Onondaga aquifer. The pumping frequency and rate are adjusted in response to water levels in the quarry sumps such that the level is maintained at an elevation that enables operations to continue unhindered by standing water while minimizing the volume of water removed. All of the groundwater removed is discharged to Cayuga Creek in accordance with a permit issued by the NYSDEC pursuant to the State Pollutant Discharge Elimination System (SPDES) program. A copy of the facility's SPDES permit is included in Appendix BB. No changes to the dewatering program at the quarry are planned in association with the proposed action, and, therefore, no increase in the potential for drawing poorer quality water upward into the Onondaga aquifer is anticipated.

The same is true for mixing that could occur when the quarry is reclaimed as one or more lakes after the life of mine has expired and reclamation of the mined land begins. That is, the proposed action will not significantly increase the potential for upward flow, mixing and water quality degradation to occur beyond the level possible for the existing quarry. Furthermore, although the poor quality groundwater in the Camillus Shale is under artesian conditions, the hydraulic conductivity of the Akron and Bertie Dolomites, which lie between the Camillus Shale and the Onondaga Limestone, is relatively low. As such, in the absence of any major vertical joints extending from the Camillus aquifer through the dolomites and into the base of the quarry, poor quality groundwater from the Camillus aquifer will not be effectively transmitted upward into the quarry.

Finally, local anthropogenic contamination of the Onondaga aquifer has been documented on the landfill sites, as has the presence of naturally occurring, highly saline groundwater in the Onondaga aquifer. Therefore, bedrock groundwater quality in the vicinity of the project site is already relatively poor, and

would not be significantly impacted by mixing with groundwater from deeper horizons.

Although the proposed mining activities have been demonstrated to have no impact on groundwater flow and quality, the placement of the quarrying and asphalt blending and distribution facilities do have the potential to affect groundwater quality. Currently, the asphalt-blending operations use eight aboveground storage tanks (ASTs) to store liquid asphalt prior to use in the asphalt mixing plants. Additionally, the asphalt operations use waste oil or natural gas to heat the mixtures, and the waste oil is stored in three ASTs, which have secondary containment. These eleven ASTs are located proximal to the asphalt plants. It is anticipated that the placement of the asphalt plants on the floor of the quarry will also include the movement of the ASTs to the quarry floor. The potential impacts to groundwater include the introduction of petroleum into the groundwater and/or surface water in the quarry during situations such as:

- The catastrophic failure of an AST;
- Spills during the transmission of the petroleum from the delivery vehicle to the ASTs; and
- The flooding of the ASTs should the dewatering pumps fail and remain dysfunctional for extended periods.

Although the floor of the quarry consists of competent bedrock with few fractures that could transmit significant quantities of water and/or petroleum, the possibility exists that petroleum introduced into the environment in the quarry could enter the bedrock water-bearing zone and migrate away from the project site. However, this scenario is unlikely due to the fact that the quarry acts as a discharge area for groundwater rather than a recharge zone due to the removal through pumping of any water that enters the quarry. Therefore, any groundwater in the vicinity of the project site is migrating toward, rather than away from the quarry.

The facility's Storm Water Pollution Prevention Plan, which is included as Appendix CC, addresses spill prevention and control, and the secondary containment in place for the waste oil ASTs. If a failure was to occur and cause a release of petroleum, the petroleum could come into contact with, and therefore contaminate, on-site surface water. The petroleum-contaminated surface water would be captured in one of the two quarry basins and subject to appropriate action prior to any discharge to Cayuga Creek via BCS's SPDES outfall. Such contaminated water would not recharge to the aquifer.

In regard to the asphalt-containing storage tanks, any "spilled" asphalt solidifies upon cooling and therefore presents limited potential for groundwater or surface water contamination.

5.1.2.2 Surface Water

Surface water bodies do not occur on the isthmus, which has been stripped of vegetation and overburden for the construction and operation of the quarrying facilities. Furthermore, the proposed action does not involve the disturbance of any surface water bodies located near the project site, or the creation of any new point source discharges to said surface waters.

Precipitation that falls on the isthmus currently flows into the quarry basins and ultimately collects in the quarry sumps, where it is detained and treated, as necessary, prior to discharge to Cayuga Creek via an open drainage ditch situated to the south of the project site. No changes to the quantity or quality of the runoff from the isthmus are anticipated as a result of the proposed action. Moreover, with the exception of relocating the piping and associated cascade from the wall of the isthmus to the south wall of the west quarry, no changes to the current storm water management practices currently used on the project site or the quantity of the discharge to Cayuga Creek will result from the mining of the isthmus. Therefore, no impacts to surface water are expected to result from the mining of the isthmus.

Although the materials and methods utilized to produce asphalt at the quarry will not change, nor will the rate of production be altered, the relocation of the asphalt plants into the east quarry basin will place these facilities in closer proximity to the quarry sumps. This, in turn, could affect the potential for petroleum compounds related to asphalt production to impact water quality within the quarry sumps. However, given that the quality of the water discharged from the sumps to Cayuga Creek is monitored and regulated in accordance with BCS's SPDES Permit, no impacts to the water quality of Cayuga Creek are anticipated as a result of the relocation of the asphalt plants. The NYSDEC and BCS have agreed that the SPDES Permit would be revised pending Mined Land Reclamation Permit modification approval and this would involve modification of the monitoring program as discussed in the following paragraph. The proposed action does not include the creation or conveyance of any "new" water pollutant. The NYSDEC's permitting authority is thus not a "new" impact control mechanism so much as an opportunity to reflect current standards.

To address potential petroleum contaminants related to the relocated asphalt plants, the analysis of the quarry discharge water for compounds typically associated with asphalt production will be performed. The National Pollutant Discharge Elimination System (NPDES) Priority Pollutant List (6 NYCRR 750-1.24 / 40 CFR 122 Appendix D) as well as the Effluent Limitations Guidelines for Existing Sources and Standards of Performance and Pretreatment Standards for New Sources for the Paving and Roofing Materials (Tars and Asphalt) Point

Source Category (40 CFR Part 443) will be consulted in selecting the parameters for this analysis.

In addition, a Storm Water Pollution Prevention Plan will be developed in accordance with the requirements under the SPDES General Permit for Storm Water Discharges from Construction Activities, which apply to disturbances of one acre or more. This plan will be developed prior to the initiation of site preparation activities and will identify potential sources of pollution that could affect storm water, and specify pollution prevention measures, erosion and sediment controls, and storm water management controls that will be implemented at the project site. Because all storm water occurring on disturbed portions of the project site will be routed into the quarry, which has more than adequate volume to accommodate peak run-off from the design year storm event, no impacts due to increased runoff from disturbed areas will result from the proposed action. Sediment-laden runoff that enters the quarry will ultimately collect in the quarry sumps where suspended sediment will settle out of the water column prior to being discharged to Cayuga Creek.

As described in Section 4.1.3.2.2.4, hydrogen sulfide odors were noted in the water pumped from the sumps in the quarry prior to modifications to the quarry dewatering system. The relatively widespread presence of gypsum in local bedrock formations and the dissolution of this mineral have translated into the common occurrence of hydrogen sulfide in western New York groundwater. As previously noted, the SUNYAB Center for Integrated Waste Management studied this condition and concluded that water in the quarry sumps, which is comprised of a mixture of groundwater and surface water runoff, contains almost no measurable sulfide and is relatively free of turbidity. The study also concluded that the agitation of sulfide-bearing sediments present near the former pump intakes during active pumping introduced sulfide precipitates into the discharge water, thereby generating the hydrogen sulfide odors. As a result of these conclusions, the pump intakes were reconfigured and pumping rates were altered to minimize the disturbance and entrainment of the sulfide-bearing sediments. Additionally, the volume of surface water and groundwater pumped from the project site will remain consistent following the proposed action, as described previously. Because this hydrogen sulfide removal process will continue following initiation of the proposed action and the volume of pumped water will not change, the proposed action will not cause an increase in the discharge of sulfur compounds to Cayuga Creek.

The following discusses potential impacts to surface water resources associated with the proposed action and why they are not anticipated.

- Increased runoff from the project site will not occur because the isthmus has already been stripped of vegetation and any precipitation falling on the isthmus immediately becomes surface runoff. This surface runoff is already being pumped out of the quarry to ultimately discharge into

Cayuga Creek. Therefore, the volume of water discharged to the creek from mining the isthmus is not expected to increase.

- With the exception of surface water flow within the quarry, modifications to the existing runoff patterns at the project site are not expected. Areas outside of the quarry will not be impacted, and the volume of water pumped out of the quarry that ultimately discharges to Cayuga Creek will not be altered.

- The hydrogen sulfide odors noted in the water pumped from the sumps in the quarry prior to the modification of the quarry dewatering system were attributed to the disturbance of sulfide-bearing sediments during past pumping operations. Once the quarry is reclaimed as a lake, the disturbance of any sulfide-bearing sediments that may be present at the bottom of the lake is not expected to occur due to the depth at which these sediments would be located (up to 150 feet below the top of rock surface). This depth would prevent the agitation of these sediments due to wind-driven wave action. If deemed necessary by the NYSDEC, these sediments will be removed prior to reclamation and disposed of appropriately. No other potential sources of sediment disturbance have been identified. Therefore, hydrogen sulfide odors are not expected following reclamation as a lake.

- The diversion of flow from Cayuga Creek into the quarry via existing fractures and/or new fractures resulting from blasting activities on the isthmus is not anticipated to occur as a result of the proposed action. Water level data from the creek and bedrock monitoring wells located to the south and east of the quarry, coupled with the lack of significant groundwater discharge zones on the faces of the existing quarry, indicate that no direct hydraulic connection exists between the creek and the quarry. Historic blasting activities at the quarry have not produced or enlarged any major fractures in the bedrock that immediately surrounds the quarry, and blasting on the isthmus is expected to generate less ground vibration in the bedrock situated between the creek and quarry. Therefore, the proposed action is not expected to create a direct hydraulic connection between the creek and the quarry through which the flow of the creek could be diverted.

Increased sedimentation of Cayuga Creek due to increased erosion and storm-water runoff emanating from disturbed areas of the project site is not anticipated because the future rate of quarrying operations is anticipated to remain consistent with the current mining rates. It is the areas of active mining operations that can be considered the most disturbed areas. It should also be noted that the isthmus has already been disturbed during the removal of the overburden as well as the continued equipment operations on the isthmus. The precipitation that falls on the isthmus under current conditions already

immediately becomes surface water flow due to the lack of overburden and significant bedrock fractures on the isthmus, so no increase in surface water volumes that could cause increased erosion would result from the proposed action. In addition, the volume of surface water and groundwater pumped from the project site to Cayuga Creek is not anticipated to change due to the proposed action. Finally, the handling of surface water and groundwater prior to pumping, which includes allowing sediments to settle out of the water column, will not be altered by the proposed action.

### 5.1.3 Air Resources

#### 5.1.3.1 General Discussion

Potential impacts to air resources associated with proposed action include air quality degradation resulting from:

- Fugitive dust emissions generated by the preparation and mining of the isthmus;
- Modifications to facility emissions associated with relocation of the processing and asphalt plants into the east quarry basin; and
- Hydrogen sulfide nuisance odors generated by continued quarry dewatering.

An analysis of these potential impacts based upon local climatological conditions, current emissions and modeled future emissions is provided in the following subsections. Additionally, a discussion regarding potential community health effects associated with the proposed action is also included.

#### 5.1.3.2 Fugitive Dust Emissions

##### 5.1.3.2.1 Site Preparation Activities

Site preparation activities will include relocating the existing stone-crushing plants, as well as the two of the three existing asphalt plants into the east quarry basin and the construction of a supply/haul road from the existing gate at Como Park Boulevard down to the crushing and asphalt plants. Fugitive dust emissions resulting from these activities have been identified as a potential impact of the proposed action. This potential impact has been categorized as short-term in nature because the cumulative duration of these activities is estimated at less than six months. Mitigation measures that will be utilized to effectively control potential temporary impacts to local ambient air quality from fugitive dust emissions caused by these activities and related vehicular traffic include:

- Application of wetting agents to haulage ways, materials used in the haul road construction and other dust generating surfaces;

- Consolidation / minimization of the number of trips necessary to relocate the equipment and construct the haul road;
- Restriction of site preparation activities during high wind occurrences; and
- Strict control of vehicle speeds.

The implementation of these measures in connection with aspects of the environmental setting will effectively minimize the potential for significant air quality impacts during the site preparation phase of the project. The aforementioned environmental factors include the lack of overburden soil on the isthmus and the fact that a large majority of the proposed site preparation activities will occur below the existing ground surface, thereby limiting transport of dust via wind currents and containing emissions within the quarry basin.

5.1.3.2.2 Limestone Mining, Crushing and Transportation Activities

Mining activities to be performed on the isthmus include the drilling and blasting of bedrock; the movement, loading and transport of rock to the central processing facilities; and limited on-site processing of oversized rock on the quarry floor. The crushing and screening of the limestone to obtain the desired product will be performed at the existing quarry using the current facilities and equipment. Loading and moving of stone around the project site will be performed in the same manner as is currently used at the existing quarry. Additionally, while the stone-processing and, therefore, loading areas for stone and asphalt will be relocated to the east quarry basin, the proposed action includes no variation in how products from the quarry will be loaded and distributed to customers via truck.

These activities will be performed in a manner that is consistent with current quarry operations, using the same type of equipment that is presently employed at the quarry. Therefore, fugitive dust emissions from these activities are not anticipated to change due to the proposed action. Similarly, the methods utilized at the existing quarry to minimize fugitive dust generation, including the wetting of internal haulage ways, the use of a state-of-the-art dust suppression system on the processing facilities and the tarping of trucks entering and exiting the quarry will continue to be employed during the mining of the isthmus.

As related in Section 4.1.3.2.2.2, the results of air monitoring at the existing quarry indicate that the concentration of $PM_{10}$ along the downwind quarry limits is well below the USEPA standard.

5.1.3.3 Air Modeling Analysis

To determine if emissions from its proposed action and existing background sources would comply with the National Ambient Air Quality Standards (NAAQS)

BCS contracted Shaw Environmental Inc. (Shaw) to complete dispersion modeling. A summary of the methodology utilized to complete the air modeling is included in the following subsections. A copy of the Air Quality Modeling Analysis Report prepared by Shaw Environmental, Inc., is included in its entirety in Appendix DD.

The Industrial Source Complex Short Term Model (ISCST3, version 02035) was used for the analysis. Prior to this analysis, a modeling protocol was submitted to NYSDEC. The NYSDEC approved the protocol, with the condition that comments be addressed in the modeling report. The NYSDEC comments and responses provided by Shaw are included in Section 3.0 of the Report.

5.1.3.3.1 Applicable Regulatory Standards

The NAAQS are ceilings (i.e., maximum allowable concentrations) based upon scientific information regarding all identifiable effects a pollutant may have on public health or welfare. Pollutants for which NAAQS have been established are called *criteria pollutants*. The USEPA identifies both primary and secondary standards for these criteria pollutants. Primary standards define levels of air quality that USEPA has judged necessary to protect public health. Secondary standards define levels for protecting the environment (e.g., soils, vegetation, and wildlife). These standards are presented in the table below. Ozone and lead, the other two criteria pollutants, are not included in the analysis because emissions of these pollutants are thought to be negligible at the BCS facility and thus of no consequence.

**TABLE 7**
**NATIONAL AMBIENT AIR QUALITY STANDARDS**

| Pollutant | Averaging Time (hour) | NAAQS (µg/m$^3$) |
|---|---|---|
| $SO_2$ | 3[a] | 1300 |
| | 24 | 365 |
| | Annual | 80 |
| | Annual | 100 |
| $NO_2$[b] | 1 | 40,000 |
| CO | 8 | 10,000 |
| | 24 | 150 |
| $PM_{10}$ | Annual | 50 |
| | 1 | 235 |
| $O_3$ | Calendar Quarter | 1.5 |
| Lead | Calendar Quarter | 1.5 |

The concentration levels listed above determine whether the ambient quality is considered acceptable with an adequate margin of safety. The USEPA requires all areas of New York to be classified as either *attainment*, *non-attainment* or

*unclassified*. Unclassified areas are assumed to be in attainment. Attainment means that a criteria pollutant's ambient concentration is below the NAAQS for a particular area.

The NYSDEC maintains regulatory authority over air permitting for the project site and is responsible for ensuring compliance with these permits. While the standards utilized to compare the modeled pollutant concentrations to applicable regulatory values were developed by the USEPA, the model utilized in this analysis was developed by the NYSDEC. The NYSDEC has promulgated two modeling guidelines—*Air Guide 26* and *DAR-1* (formally *Air Guide 1*) —to which permit applicants must adhere. A meeting was held on September 22, 2005 with NYSDEC staff at both the Region 9 and Albany Main Office ( via telephone conference). Representatives of the NYSDEC Divisions of Air Resources and Environmental Permits participated, along with BCS representatives and Shaw Environmental. At that meeting, it was agreed Air Guide 26 would be used and that a DAR-1 modeling analysis would not be required.

Air Guide 26 is intended for use by applicants, who need to perform ambient impact analyses for criteria pollutants in support of air permit applications and other activities that require modeling. Recommended models, including the ISCST3 Model used for this analysis, are listed in USEPA's *Guideline on Air Quality Models (Revised),* USEPA 450/2-78-027R, July 1986, and Supplement C (Federal Register, August 9, 1995).

To determine compliance with the NAAQS, Shaw performed an Air Guide 26 compliance demonstration test by modeling pollutants/emissions from the project site. This model was considered appropriate for the project site because the pollutants of concern are criteria pollutants. A compliance demonstration test uses maximum-modeled concentrations from a proposed source (i.e., the project site) and regional background levels derived from local ambient air monitoring data. The concentrations of the criteria pollutants obtained from local ambient air monitoring data, plus the modeled concentrations from project site, were combined to see whether the predicted *total* concentration exceed the NAAQS.

5.1.3.3.2 Modeling Inputs

The local ambient air monitoring data utilized in the compliance demonstration test was obtained from the USEPA Aerometric Information Retrieval System database. The second-highest concentration recorded for each pollutant over the past five years (2000-2004) was used in the test. The closest continuous monitoring station is located at the New York State Thruway maintenance facility located at 185 Dingens Street, approximately 3.2 miles southwest of the quarry. This station monitors for sulfur dioxide, carbon monoxide and nitric oxide. The closest monitoring station that samples for $PM_{10}$ is located in the Town of

Niagara on Frontier Avenue at 55th Street, approximately 20 miles northwest of the quarry.

The type of land use in the vicinity of the project site was utilized in the development of the model for the project site. The ISCST3 Model uses different coefficients depending on whether an area is classified as *rural* or *urban*. To designate a site as either rural or urban, land use within a 3-kilometer radius of a site is classified according to criteria developed by *Auer* (Table 4 in the Air Quality Modeling Analysis Report, Appendix DD). Based upon the results of this procedure, rural dispersion coefficients were used in the modeling analysis. The topography of the project site and vicinity were also incorporated into the Model developed for the compliance test.

The ISCST3 Model also incorporated local meteorological data to calculate the ground level concentrations of the modeled pollutants/emissions. Meteorological parameters utilized in the model for the project site included wind speed and direction; stability or atmospheric turbulence; mixing height (i.e., the distance above the ground at which the unrestricted vertical mixing occurs in the atmosphere); and temperature. The meteorological data utilized in this model was obtained from Buffalo-Niagara International Airport for the years 1993-1997. The airport, approximately 3.5 miles north of the quarry, is considered "meteorologically representative." This weather data was endorsed and provided by NYSDEC for use in this model.

Finally, the ISCST3 Model requires certain parameters, for point sources, to calculate ambient pollutant concentrations. Those parameters are exhaust height, exhaust diameter, exhaust flow or velocity, and exhaust temperature. For the large source area (identified below), the model requires north-south and east-west dimensions. These parameters are taken or derived from BCS and other backup data either developed by Shaw or obtained from equipment manufacturers. For the point sources (identified below), the base elevations were adjusted to account for their relocations into the basin of the quarry.

5.1.3.3.3 Modeling Sources and Receptors

Although all sources will be "depressed," the fugitive sources were modeled at a height equal to ground level (i.e., at the top of quarry) to be conservative. The point-source based elevations were adjusted accordingly to account for their locations in the quarry basin (i.e., 150 feet below grade). A total of four sources are represented in the modeling for the project site (i.e., three point sources and one large area source).

The three blacktop plants represent the point sources on the project site (Note that all three existing plants were modeled for conservatism, although BCS's plans call for decommissioning one of the three plants when operations are

moved to the east basin as proposed in the current action.). To be conservative, these three sources were modeled at locations at the bottom of the east quarry near the southeast property line to maximize their potential ambient air impacts. Each plant's emission rate is based on its maximum operating capacity. This number is multiplied by the applicable emission factor in USEPA AP-42 to arrive at an emission rate. Two sets of emission rates are used in the modeling analysis. Short-term emission rates are used to determine modeled impacts for those pollutants that have standards with averaging periods of 24 hours or less. Long-term emission rates are used to determine modeled impacts for those pollutants that have standards with averaging times greater than 24 hours. Conservative operating data, presented in Table 7 of the Air Quality Monitoring Analysis Report, was used to determine the emission rates used in the modeling and are compared with the actual operating data for 2004. As shown in the table, the operating data used to develop the emission rates used in the modeling are much higher than the actual operating data reported in 2004.

The large source area utilized in the model for determining particulate emissions ($PM_{10}$) originating from the project site includes the three blacktop plants as well as the stone-processing equipment (i.e., stone crushers, conveyor belts, screens, etc.) used on the project site. The particulate emissions estimation for the large source area is based on a reasonable dust emission rate (i.e., total suspended particulates), which in turn is based on historical information provided by BCS.

Emissions from the large source area are estimated based on the following assumptions:

- All individual sources are aggregated into one source;
- All individual sources are assumed to operate at the same time;
- Dust emissions of 100 tons per year are used in the $PM_{10}$ emissions estimation; and
- $PM_{10}$ is assumed to be 15% of dust emissions.

A comparison of $PM_{10}$ emissions utilized in the model and actual $PM_{10}$ emissions reported for 2004 are presented in Table 8 of the Air Quality Monitoring Analysis Report. As shown in the table, the $PM_{10}$ emissions used for modeling are conservative, both because emissions used for modeling are higher than what was reported for 2004 and the quarry's operating schedule used in the modeling is over 200 percent higher than the actual operating schedule for 2004. Also, while this table does not reflect the $PM_{10}$ emissions from the blacktop plants, $PM_{10}$ emissions from these plants were used in the modeling and were 150 percent higher than the $PM_{10}$ emissions reported for 2004. Therefore, the $PM_{10}$ emissions used in the modeling are overly conservative, which adds a sufficient measure of safety.

The ISCST3 Model uses source data, meteorological data and other input parameters, listed in the previous sections, to calculate concentrations at downwind locales (receptors). The model also has the capability to incorporate local terrain in its dispersion calculations. Terrain in the vicinity of the quarry is gently-rolling. For the quarry, a receptor network (4,131 receptors), incorporating ground elevations, was developed and used. In addition, 20 discrete receptors were placed along the eastern edge of the quarry to determine concentrations at sensitive receptors.

The dense spacing ensures that the location of the maximum-modeled concentration was identified (for each averaging period). The receptor spacing was as follows:

- Property line, 20 meter spacing
- Property line to 4,000 meters, 50 meter spacing
- Property line to 100 meters, 25 meter spacing (accounts for adjacent "sensitive" receptors [e.g., schools, parks, hospitals])

5.1.3.3.4 Results of Air Modeling Analysis

As shown in the table below, the maximum-modeled emissions for all criteria pollutants from the proposed project are below the NAAQS.

**TABLE 8**
**MODELING RESULTS**

| Pollutant | Averaging Period (hr) | Rank | Concentrations | | | |
|---|---|---|---|---|---|---|
| | | | Max Modeled ($\mu g/m^3$) | Monitored ($\mu g/m^3$) | Total ($\mu g/m^3$) | NAAQS ($\mu g/m^3$) |
| $NO_2$ | Annual | H | 33 | 45.2 | 78.2 | 100 |
| $SO_2$ | 3 | HSH | 648 | 137 | 785 | 1,300 |
| | 24 | HSH | 158 | 68.5 | 226 | 365 |
| | Annual | H | 5.31 | 20 | 25.3 | 80 |
| CO | 1 | HSH | 9,612 | 5,872 | 15,484 | 40,000 |
| | 8 | HSH | 2,639 | 2,999 | 5,637 | 10,000 |
| $PM_{10}$ | 24 | H6H | 88.6 | 49 | 138 | 150 |
| | Annual | H | 5.09 | 18 | 23.1 | 50 |

A listing of the modeled locations is included in Attachment 1 of the Air Quality Modeling Analysis Report

NAAQS – National Ambient Air Quality Standards

H – Highest concentrations over all receptors

HSH – Highest second high concentrations over all receptors

H6H – Highest sixth high concentrations over all receptors

Furthermore, the predicted total concentrations of all criteria pollutants, which consist of the sum of the maximum-modeled concentrations and background concentrations obtained from the local ambient air monitoring data, are below the NAAQS. Therefore, no adverse impacts to ambient air quality are anticipated as a result of the proposed action.

5.1.3.3.5 Supplemental Air Quality Modeling

To estimate emissions of $PM_{10}$ specifically from on-site traffic-generated road dust, an air dispersion analysis was completed to supplement the January 2006 analysis. The approach or protocol applied for the supplemental dispersion analysis was the same as that used in the earlier analysis, including the ISCST3 model, meteorological data, receptors, land use classification and stack height analysis. The supplemental dispersion analysis is included in Appendix EE.

The supplemental modeling included three "new" or additional sources compared with the earlier dispersion analysis to account for on-site traffic-generated road dust. The sources are the East Basin, North Isthmus and South Isthmus. Each of the three sources was modeled as an area source. Modeling inputs for these sources included vehicle type, length of paved and unpaved road, dust control efficiencies, amount of stone handled per day and other operating parameters.

The applicable regulatory standards are discussed in Section 5.1.3.3.1.The results of the supplemental air dispersion analysis indicate that maximum-modeled concentrations of $PM_{10}$ from the proposed action are below the NAAQS, as shown in the table below.

**TABLE 9**
**SUPPLEMENTAL MODELING RESULTS**

| Pollutant | Averaging Period (hr) | Rank | Concentrations | | | |
|---|---|---|---|---|---|---|
| | | | Max Modeled ($\mu g/m^3$) | Monitored ($\mu g/m^3$) | Total ($\mu g/m^3$) | NAAQS ($\mu g/m^3$) |
| $PM_{10}$ | 24 | H4H | 76.4 | 31.0 | 107 | 150 |
| | Annual | H | 19.2 | 15.0 | 34.2 | 50 |

A listing of the modeled locations is included in the Air Quality Modeling Report for $PM_{10}$

NAAQS – National Ambient Air Quality Standards

H – Highest concentrations over all receptors

H4H – Highest fourth high concentrations over all receptors

The supplemental air quality modeling results confirmed that the proposed action will not have a significant adverse impact on $PM_{10}$ levels on the modeled locations in the project area.

#### 5.1.3.4 Hydrogen Sulfide

In response to complaints regarding hydrogen sulfide odors associated with quarry dewatering operations, the dewatering system was modified and a NYSDEC-approved hydrogen sulfide treatment system was installed at the quarry in 2001. The results of daily operational monitoring performed by BCS since 2001, air sampling and analysis conducted in 2004 by the community, and a real-time survey performed by TVGA in October 2005 have indicated the absence of hydrogen sulfide concentrations equal to or above 1 ppm.

According to the USEPA, the threshold at which hydrogen sulfide odors become offensive is 3 ppm. There is considerable individual variability in the odor threshold for hydrogen sulfide in humans; the thresholds can range from 0.0005 to 0.3 ppm, which is much lower than the OSHA ceiling (20 ppm). However, although its strong odor is readily identified, olfactory fatigue occurs at high concentrations and at continuous low concentrations. For this reason, odor is not a reliable indicator of hydrogen sulfide's presence and may not provide adequate warning of hazardous concentrations. Hydrogen sulfide is slightly heavier than air and may accumulate in enclosed, poorly ventilated, and low-lying areas.

With the exception of relocating the cascade to the south wall of western quarry basin, approximately 800 feet from the nearest residence, no modifications to the existing pumping system are planned in connection with the mining of the isthmus. The treatment system will continue to be utilized for the dewatering of the quarry during the mining of the isthmus and will operate under the same design principals utilizing the same basic components. The system has proved effective at minimizing hydrogen sulfide levels and associated odors, as indicated by the significant reduction in the number of odor-related complaints received by BCS (see Section 4.1.3.2.2.4 regarding complaints). Therefore, the mining of the isthmus will not result in an increase in hydrogen sulfide emissions over current levels, and no additional impacts relative to hydrogen sulfide odors are expected to result from the proposed action.

#### 5.1.3.5 Airborne Health Effects

Based upon the results of studies completed to date by the NYSDOH, there is no evidence that operation of the quarry has caused adverse health effects on the surrounding community. Furthermore, modeling of respirable silica-bearing dust emissions from the quarry performed by the NYSDEC in 1996 indicated that emissions levels were well below the short and long-term guidance values established to protect the general public from adverse health effects. Air quality modeling conducted in 2005 in conjunction with this DEIS also concluded that predicted emissions of criteria pollutants from the processing and asphalt plants are below the NAAQS, which are federal standards that were established to

protect public health. Therefore, the proposed action does not constitute a public health threat with respect to air emissions.

### 5.1.4 Ecological Resources

#### 5.1.4.1 Vegetation

The proposed action will permanently remove vegetation from the isthmus, which consists primarily of successional old field, and the sparsely vegetated gravel-pile plant communities. The loss of isthmus vegetation is not a significant adverse impact because:

- The plant communities to be removed are highly disturbed and include large numbers of exotic species;
- No federally endangered or threatened plants, or plants listed under the New York State Protected Native Plant Act are present on the isthmus;
- No rare ecological communities, or unusual habitats where threatened and endangered species are most likely to occur, are present on the isthmus; and
- The vegetative communities to be removed are well represented locally.

#### 5.1.4.2 Wildlife

The proposed mining will eliminate and / or displace the limited wildlife that inhabits the isthmus and will permanently eliminate the habitats on the isthmus as a result of the removal of existing vegetation. These impacts, however, are not considered significant because:

- The isthmus is used for stone-processing actvities and asphalt production. Thus, the wildlife that inhabits the isthmus is limited in diversity and number.
- No rare, threatened or endangered wildlife species were identified on or adjacent to the isthmus or within the project impact area;
- As quarry-related activity changes on the isthmus, it is expected that the majority of wildlife will be displaced rather than eliminated during blasting. The displaced wildlife is expected to relocate to the undisturbed perimeter buffer area and other undeveloped land in the vicinity of the project site;
- No significant communities or unique wildlife habitats were identified on the isthmus or within the project impact area.

With the exception of the limited area to the north of the isthmus, the isthmus is isolated from the potential wildlife corridor created by Cayuga Creek, Stiglmeier Park, Reinstein Woods Nature Preserve, the railroad right-of-way and the

open/wooded land, by the east and west quarry basins and Como Park Boulevard to the south. Therefore, impacts to this possible wildlife corridor are not considered significant.

Furthermore, the isthmus does not border Cayuga Creek or any tributaries to Cayuga Creek. The proposed action will not involve any disturbances of the bed or banks of Cayuga Creek, nor will it require any new point discharges to the creek. Groundwater, storm water and process water are discharged from the quarry to a ditch that feeds into Cayuga Creek. This discharge is authorized by a State Pollutant Discharge Elimination System (SPDES) Permit. The Permit requires periodic monitoring of the quality of the discharge to ensure compliance with established limits that protect receiving waters. Surface water runoff and groundwater that originates from within the project site following the initiation of the proposed action will be managed in the same manner, with discharges to Cayuga Creek complying with SPDES requirements. Therefore, Cayuga Creek water quality will not be affected. In addition, a Storm Water Pollution Prevention Plan (SWPPP) will be developed in accordance with SPDES requirements. The SWPPP will conform to the requirements for General Permit for Storm Water Discharges from Construction Activities.

Based upon the regulatory requirements identified above, no impacts to aquatic species occurring within Cayuga Creek will result. Moreover, no threatened, endangered or special concern species are known to occur in Cayuga Creek. As discussed in Section 4.1.4.3.1, a species of imperiled mussel was reported upstream of the BCS's outfall. No impact to the resource is expected from the BCS water discharge. The potential for the reduction in the flow of the creek due to the diversion of surface water into the quarry via bedrock fractures and joints is addressed in Section 5.1.2.2.

5.1.4.3 Dr. Victor Reinstein Woods Nature Preserve

The potential for the proposed action to impact rare, threatened and endangered species (RT&E) that occur within the NYSDEC Dr. Victor Reinstein Woods Nature Preserve is negligible. The only RT&E species that have been documented within the preserve is the winged monkey flower (*Mimulus alatus*), a state-designated rare species State species of special concern that have been documented as residents within Reinstein Woods include sharp-shinned hawk (*Accipiter striatus*), spotted salamander (*Ambystoma maculatum*), and Jefferson's salamander (*Ambystoma jeffersonianum*) These species have small-to-moderate sized home ranges (< 0.51 square miles).(Source: *Ecological Survey Buffalo Crushed Stone Expansion Site*, Beak Consultants, Inc. August 1998, which is provided in Appendix U). It would be unreasonable to consider that the individuals occurring in the preserve rely on habitats or other resources on the isthmus, which is more than 0.5 miles to the northwest.

#### 5.1.4.4 Wetlands

The review of United States Fish and Wildlife Service National Wetland Inventory and New York State Department of Environmental Conservation Freshwater Wetlands maps indicated that no wetlands are mapped on or adjacent to the isthmus. A field survey completed by Northern Ecological Associates, Inc. confirmed that no wetlands are present on the isthmus (see "Ecological Survey Report, Buffalo Crushed Stone Como Park Facility Isthmus Area, Town of Cheektowaga, Erie County, New York", September 2005, included as Appendix T). Additionally, none of the plant communities support hydrophytic vegetation and none exhibit indicators of wetland hydrology. Therefore, no impacts to wetlands will result from the mining of the isthmus or moving of the process equipment.

## 5.2 Human Resources

### 5.2.1 Land Use and Zoning

#### 5.2.1.1 Zoning

The subject site is zoned AG (Special Aggregates District). The proposed action conforms to this zoning. Additionally, the proposed action will adhere to the setback requirements set forth in Section 260-38 (b) of the *Zoning Law of the Town of Cheektowaga* (May, 2004). Therefore, the proposed project will have no zoning impacts.

#### 5.2.1.2 Existing Land Use

##### 5.2.1.2.1 Town of Cheektowaga

The proposed action is consistent with overall land use patterns in the Town of Cheektowaga in that it involves the mining of land within the boundaries of the existing site, which is in turn situated within a corridor that is primarily characterized by industrial/manufacturing and commercial land use. Therefore, no impacts to existing land use patterns in the Town of Cheektowaga will result from the proposed action.

##### 5.2.1.2.2 Study Area

The proposed action involves the relocation of existing facilities and the mining of the isthmus, each of which will occur within the boundaries of the project site. No additional land outside the boundary of the project site is required. The project site is situated in the northern portion of the study area, which is characterized by industrial, manufacturing and commercial use. The proposed action is

compatible with existing adjacent land uses to the east, west and north of the project site, which consist of undeveloped lands zoned for industrial use to the east and west and the railroad corridor to the north of the project site (see Figure 10). Contrasting land uses occur to the south of the project site and consist of limited residential use adjacent to the western and eastern sides of the southern project site property line. However, these uses occur adjacent to areas already in use by the quarry and are separated by the town-required 200-foot buffer zone. Additionally, the majority of the land use south of the project site is undeveloped open space, which serves as a transition area between the project site and adjoining land uses. Land use immediately south of the isthmus is compatible with the proposed action and includes one commercial building owned by BCS, a telecommunications tower, and the access road and scale house for the quarry. The design of the proposed action will also incorporate the minimum 200-foot open space requirement between adjacent right-of-ways and property lines to the north and south of the isthmus respectively.

The proposed action will occur within the boundaries of the project site, which is already developed for industrial use. Additionally, the proposed action will not reduce the amount of open space in the study area. Therefore, no significant impacts to existing land use patterns in the study area or adjacent to the project site will result from the proposed action.

5.2.1.3 Planned Land Use

As noted in Section 4.2.1.3.1, the Town of Cheektowaga was approximately 85% developed in 1991 according to the Comprehensive Master Plan (CMP) completed during that year. The stated goals of the CMP are to preserve existing neighborhoods, protect residential areas from commercial and industrial encroachment, maintain government services, and enhance key development districts. The plan identified and analyzed six target sectors in the Town. These target sectors were identified by community leaders as undergoing a transition in land use or as large, undeveloped areas facing development pressures. The project site is not located in or adjacent to a target sector. Therefore, the proposed action will not directly impact the focused components of the CMP.

Extending the active life of the mine, however, supports the vision for the town as presented in its CMP:

- Accommodation of growth - through the local provision of raw materials used in construction;
- Providing opportunities for employment - by extending the duration of the jobs at the project site; and
- Preserving open space - by mining within the already-established footprint of the quarry and causing no loss of publicly used open space.

The CMP also establishes community-wide planning objectives and policies and/or procedures for achieving these objectives. An evaluation of how the proposed action relates to each of these planning objectives is provided below:

5.2.1.3.1 Vacant Land

The CMP identifies vacant/undeveloped lands that are located in the southeastern portion of the study area, some of which are currently owned by Buffalo Crushed Stone. These lands adjoin the east, south and west sides of the project site. The CMP emphasized the importance of the remaining vacant lands within the Town and the need to preserve open spaces having particular ecological value (e.g., creek corridors, wetlands, etc.), as well as the goal of providing controlled public access to publicly owned open space. The proposed action will occur within the existing boundaries of the project site and will not require the use and/or development of any land designated in the CMP as vacant/undeveloped. Additionally, the undeveloped lands located along the periphery of the project site will continue to be used as a natural open-space perimeter buffer area.

5.2.1.3.2 Development Constraints/Environmental Features

The CMP identifies the need to control further development that could result in increased flood hazards, the removal of the remaining densely wooded areas, or the disturbance of areas containing archeological, historical or significant ecological resources. The proposed action complies with these objectives in the following ways:

- The proposed action does not impact floodplains or contribute to flooding hazards within the Town. Additionally, storm water runoff occurring on existing developed portions of the project site will continue to be managed on-site, and no increase in post-development storm water discharges will result from the proposed action;
- The proposed action is located entirely within the existing boundaries of the project site and does not impact any of the wooded areas identified in the CMP;
- Based upon correspondence with the New York State Office of Parks, Recreation and Historic Preservation (Appendix Z) and the ecological survey (Appendix T) of the areas impacted by the proposed action, no areas of archaeological or historical significance occur on the project site, nor does the project site contain any rare, threatened or endangered species or species of special concern.

5.2.1.3.3 Transportation

The CMP identifies traffic as a concern within the Town and establishes the need to discourage excess through-traffic on residential collector streets, reduce the number of entrance and exit points in the target sectors, and initiate a community-wide beautification program. The CMP specifically identifies concerns relating to the increased use of Como Park Boulevard and Losson Road in association with growth in the Town of Lancaster and the William Street Thruway interchange. Based upon the fact that the proposed action will not generate traffic beyond current levels, the proposed action will have no impact on planning initiatives relating to transportation.

5.2.1.3.4 Civic, Public and Governmental Facilities

The CMP identified the following three objectives:

- Increase awareness for public safety needs throughout the community;
- Improve response times to emergency calls; and
- Provide for the development of public safety policy in sector areas.

The proposed action will not adversely impact civic, public or governmental facilities and, therefore, does not conflict with any of the CMP-based objectives for municipal facilities or services.

5.2.1.3.5 Land Use Controls

The CMP identified the need to revise the zoning ordinance to reflect the recommendations of the CMP, and to implement the appropriate land use controls. As a result, a revised Zoning Law was adopted by the Town in 1992 and was accompanied by a revised Zoning District Map. The only change to the project site resulting from this revision was the reclassification of a portion of adjacent lands along the north side of Como Park Boulevard from Restricted Business (RC) to Neighborhood Service District (NS). The latter effectively replaced the former district as a result of the revision to the zoning law, however, the uses permitted within these districts was essentially the same. No other changes or new controls were instituted for the remaining portions of the project site. This indicates that the historical land use at the project site was acceptable, in accordance with the previous zoning and was re-authorized under the current CMP and Zoning Law, without any additional controls or restrictions.

The proposed action is consistent with historical land uses within the community and conforms with current zoning and land use controls, and as a result, supports the community-wide planning objectives and policies and/or procedures for achieving the goals identified in the CMP.

#### 5.2.1.3.6 Utility Analysis

The Town is fully served with public utilities by New York State Electric and Gas, Niagara Mohawk Power Company and National Fuel Gas Corporation. Municipal potable water is available throughout the Town and municipal sanitary sewer is available along all main thoroughfares. Additionally, the CMP notes that a number of former industrial water users have left the community, which has resulted in excess municipal sanitary sewer and potable water capacity. The proposed action will have no effect on utility planning as outlined in the CMP because it places no additional demands on any public utility.

### 5.2.2 Traffic

The proposed action is not intended to increase the rate of production from the quarry, and, therefore, will not result in an increase in traffic volumes on the local road network. Instead, the amount of daily and hourly traffic generated by the quarry is expected to remain consistent with current levels. As such, the proposed action will not result in any adverse impacts to existing traffic volumes or traffic patterns.

### 5.2.3 Blasting

#### 5.2.3.1 General Discussion

Potential impacts due to noise, vibration and flyrock from blasting were identified as concerns during the public scoping for this project. Citizens' specific concerns are annoyance and possible structural damage. Additionally, concerns were expressed relative to the potential for blasting on the isthmus to impact the integrity of the Schultz landfill located to the east. This section discusses blasting in general, evaluates potential blasting impacts on the surrounding community and landfill, and describes site-specific practices to be utilized to minimize blasting impacts.

Infrastructure construction projects such as those for bridges, highways and utilities often use blasting as an effective, practical method to remove or shape bedrock. The mining industry also utilizes blasting because it is often the most practical method available to loosen overburden, aggregate or mineral reserves from the subsurface. The project site is an open-pit mine where blasting has been used for many years as the primary method to break out manageably sized pieces of bedrock for processing and eventually for use as aggregate and the production of asphalt pavement and other products.

Sequential blasting of nearly vertical working faces is used to break out or loosen the limestone bedrock at the quarry. The blast breaks out a manageable quantity

of limestone that is deposited in a pile at the base of the working face. As each face is blasted, a bench is left behind. The bench allows for equipment to remove the broken limestone for processing and maintains stability of the mine walls.

Many types of explosives are used in the mining industry. The type of blasting agent used at the project site is a mixture of ammonium nitrate (AN), which is a common fertilizer, and fuel oil (FO). Within the industry, this blasting agent is often identified as ANFO and has been proven to be an economical and safe alternative to other high-energy explosives. Although ANFO can burn if it is ignited, it requires confinement and an additional source of energy before it can be detonated with enough force to be an effective blasting agent.

Typically, a rock drill is used to bore a series of vertical boreholes into the limestone that are generally parallel to the working face. The ANFO is then placed in the boreholes along with a small booster charge and blasting cap that produce the energy level necessary to achieve the detonation of the ANFO. Expertise, experience and careful planning determine the precise pattern and depth for the boreholes and the amount of ANFO used in each blast.

A substantial amount of energy is needed to break stone away from the working face of the mine. Energy that does not get used up breaking stone is wasted in the form of ground vibration and airblast. Explosives are not cheap. It takes about two tons of natural gas to manufacture one ton of ammonium nitrate blasting agent. It is in BCS's best interest to make each blast as efficient and effective as possible.

The energy distribution through the stone to be blasted is controlled by the quantity, depth and spacing of the boreholes; the amount of ANFO used; and detonation timing. The holes are detonated in a progressive sequence that resembles slices of bread being removed from a loaf. One slice is removed to make room for the next slice, and so on. Controlling the number of holes detonated at one time also controls the amount of energy released. The brief time between detonations is measured in milliseconds and is referred to as delay.

Adverse effects of blasting that can result in property damage include flyrock, air overpressure, and ground vibration. The flyrock is perhaps the most dangerous of the three because of the added threat of direct personal injury. Air overpressure and ground motion are not direct threats to personal injury, but can result in human annoyance. The Office of Surface Mining, Reclamation and Enforcement (OSMRE) regulates blasting associated with surface mining. OSMRE regulations protect the public from the possible negative effects of surface mining, and include well-defined limits for the control of the three adverse effects identified above (30 CFR Part 816). The regulations are available for review at BCS's office and at http://www.osmre.gov/regindex.htm#K.

The following subsections discuss flyrock and ground vibration, and:

- Generally describe the effect and related potential impact to people and property;
- Identify applicable regulatory control limits or guidelines;
- Compare historical blasting data with the applicable regulatory limit or guideline;
- Analyze potential impact from blasting in the isthmus areas; and
- Describe methods to minimize or eliminate the potential impacts.

Air overpressure is addressed in Sections 5.4.2.2.

5.2.3.2 Flyrock

Flyrock refers to stone dislodged during blasting that is projected through the air or along the ground. Flyrock can cause serious personal injury and property damage when it comes into direct contact with people, structures, vehicles, and equipment. Some throw of stone is normal to most blasting operations. Flyrock refers to undesirable and excessive throw that results from improper blast design, loading, or unexpected geological conditions. The greatest potential for injury or damage due to flyrock occurs when occupied structures (e.g., homes, offices, etc.) and people are present in close proximity to the blast zone. The OSMRE regulations prohibit flyrock from being cast more than half the distance to the nearest dwelling or other occupied structure, beyond the blasting control area, or beyond the permit boundary.

Blasting operations on the isthmus area have the potential to generate flyrock. The greatest potential for this to occur will be during blasting of the upper most 40-feet of bedrock. Blasting operations on the isthmus area will be conducted in the same manner as they have historically been performed within the existing quarry. The latter point is significant because historical records, available for review at BCS's office at 2544 Clinton Street, indicate that no property damage or personal injury resulting from flyrock has occurred at the quarry within the last 20 years. As for recent records, BCS's blasting contractor, St. Lawrence Explosives, is responsible to compensate claimants for all property damage claims associated with blasting. In the last four years, one claim has been filed against the quarry. No award was made in the case. Additionally, the isthmus is isolated from adjacent properties by the existing quarry basins on the east and west, and by the railroad corridor on the north, which makes the possibility of property damage or personal injury from flyrock even less likely than at present. The continued use of proper blast design will reduce the potential for flyrock to be generated by blasting in the isthmus area.

Flyrock can be effectively controlled by knowledgeable placement of the explosive in relationship to the face, the top of the blast holes, and to the known zones of weakness in the stone. The main control that can be applied to the blast design is to ensure proper burden and stemming, together with loading the explosives into the boreholes to place the energy release at the points where it is required to break the stone. Where blasting must take place in areas of greater risk (e.g., close to occupied structures), blasting mats or a layer of soil that is free of stones placed on top of the limestone surface can be used to control flyrock.

5.2.3.3 Ground Motion

In a well designed blast, more than 90% of the blast's energy is consumed as it fractures the stone. The remaining energy is converted to vibrations in the form of ground motion or air overpressure. Ground motion is the principal vibration that will result from blasting, and consists of wave motion spreading outwards from the blast. This motion has been compared to the waves generated by a stone dropped in a pool of water. Energy losses occur as the vibration waves spread outward, causing them to diminish in intensity with distance.

Excessive ground motion can result in physical damage to nearby structures, with the most common type of damage being the aggravation of existing minor cracks. When exposed to any significant ground motion, perceptible shaking of a structure will also cause some degree of subjective reaction by the occupants. The extent of this subjective reaction can result in responses ranging from annoyance to fear.

Levels of ground vibrations that are lower than those necessary to cause damage to structures are often perceptible to people. The degree to which people react to these vibrations is entirely subjective, and is often determined by one or more of the following factors:

- The magnitude of the event itself:
- Human perceptibility;
- The frequency (number of events per day or week);
- The time of day;
- The structural response itself;
- The structural condition of the property;
- The degree of activity of the subject;
- The state of health of the subject;
- The state of mind of the subject;
- The position and attitude of the subject;
- The local perception of the operation;
- The history of local damage claim payments; and

- The history of "good neighbor" payments or assistance related to damage claims where liability was denied.

Wall rattling, secondary noises, and the presence of airblast may also aggravate the human response and increase the possibility for annoyance from ground vibration. In the case of the proposed project, the human response to blasting effects can be gauged by the number of complaints received and property damage claims. These are discussed in Section 5.2.3.2.

The United States Department of the Interior Bureau of Mines (the Bureau) has defined threshold damage due to blast-generated ground vibrations as the occurrence of cosmetic damage, or the most superficial interior cracking of the type that develops in all homes independent of blasting. The Bureau characterizes major damage as that which results in the fall of plaster or serious cracking, while minor damage includes fine plaster cracks and the opening of old cracks. Ground-motion blast-vibration damage is well documented and points at which threshold damage can occur are the best defined of the three adverse effects of blasting. (Sources: *Structure Response and Damage Produced by Airblast from Surface Mining*, U.S. Bureau of Mines RI-8485 (1980) and *Structure Response and Damage Produced by ground Vibration from Surface Mine Blasting*, U.S. Bureau of Mines RI-8507 (1980). The reports are available for review at the BCS office.)

Peak Particle Velocity (PPV) considered in conjunction with the frequency and duration of the blast vibration, is the most appropriate and accurate indicator of possible blast damage. Particle velocity, typically expressed in inches per second (in/s), is the rate at which the ground vibrates at a given location. It is a primary factor in the occurrence of damage to structures in the vicinity of a blast zone. Cosmetic damage is unlikely to appear at velocities under 3.0 in/s. Major damage usually only occurs when ground vibrations exceed 3.0-4.0 in/s, or some other reason exists for the damage (e.g., pre-existing structural weakness).

Frequency also considerably affects the possibility of blast-vibration damage. This is because the maximum response of a structure to blasting vibration occurs when the frequency of the ground motion matches the frequency of the structure, causing structure resonance. Conversely, when a contrast between the ground vibration frequency and the natural frequency of the structure exists, very little energy is transmitted into the structure. The fundamental natural frequency of low rise (one- or two-story) residential structures ranges from 3 to 12 Hertz (HZ).

The Bureau studied the effects of repeated blasting on residential structures in the vicinity of surface mines to address the issue of structural fatigue and damage. The study was conducted over a two year period, during which a newly constructed wood-frame house was subjected to 587 production blasts with particle velocities that ranged between 0.10 and 6.94 inches per second (in/s).

The upper range of particle velocities measured at the test structure was well above the maximum regulatory limit established to prevent damage to structures, which is 2.0 in/s or less, depending on the frequency of the blast vibrations. The study revealed that cosmetic or hairline cracks occurred during the construction of the house and also during a period when no blasting was taking place. The formation of cosmetic cracks increased from 0.3 to 1.0 cracks per week when ground motions exceeded 1.0 in/s. The study also revealed that human activity and changes in temperature and humidity produced cracks that were equivalent to ground motions up to 1.2 in/s.

Following this blasting effects study, the house was mechanically shaken to simulate the effects of blasting twice per day at levels of 0.5 in/s for a multi-year period. This was to determine the threshold of fatigue cracking of the wall coverings. The first evidence of damage (e.g., crack) appeared after the equivalent of 28 years, assuming 200 workdays per year. This equates to 56 years if blasting at that level occurred only once per day, or 93 years if blasting occurred three times per week at this level. Based on this study, the effects of repeated blasting on similar residential structures at levels below the limits prescribed by OSMRE regulations are not considered to represent a significant impact with respect to damage.

The Bureau studies are further discussed in the Vibra-Tech November 30, 2000 report, entitled "Measurement and Analysis of Blast Induced Ground and Air Vibration in the Vicinity of the Buffalo Crushed Stone Quarry, Cheektowaga, New York on November 30, 2000 Using IsoSeismic RSVP and Vibra-Map Techniques" The report is available for review at the BCS office.

The OSMRE regulations offer mine operators four options for complying with the ground vibration limits. BCS uses the maximum allowable particle velocity limits prescribed in the blasting-level chart developed by the Bureau (See Figure 12). This is the most precise option available, and requires the monitoring and recording of each blast event for PPV and frequency. This is required because the limits prescribed under this method are a function of the blast- vibration frequency. For example, at frequencies of 4-11 Hz, the maximum allowable particle velocity is 0.75 in/s. The maximum allowable particle velocity for blast vibration frequencies of 11-30 Hz range from 0.75 in/s to 2.0 in/s, while at frequencies above 30 Hz, the maximum allowable particle velocity is 2.0 in/s. These regulatory levels were established to prevent damage to structures, and are based on failure characteristics of building materials. These limits are also intended to minimize subjective, negative human responses.

5.2.3.3.1 Previous Studies

A number of blasting studies and ground vibration monitoring programs have been completed at the quarry over the last ten years. Data collected during the

course of these studies and programs are summarized in the following subsections.

OZA Inspections Blasting Study

Robert Lamb of OZA Inspections, Inc., completed a blasting and noise study at the Buffalo Crushed Stone Como Park quarry site in 1995 in connection with a then proposed expansion of the quarry site. The associated report, entitled "Blasting and Noise Study, Buffalo Crushed Stone Como Park Quarry Cheektowaga New York", January 1996, provided a historical perspective of the development of standards, including the above noted OSMRE regulations, which address the adverse impacts of ground vibrations and air blast, and the relative intensities at which these phenomena have the potential to produce damage to nearby structures.

The OZA study tabulated vibration and sound pressure monitoring data from blasting events at the BCS site. Various receptor locations throughout the community were studied from March 24, 1995 to December 8, 1995. Data from 122 blasts made during that time were recorded and evaluated. The report also predicted ground and air vibration levels for blasting operations in connection with the additional mining of the quarry proposed in 1998 and their influence on the surrounding community.

The OZA study included measurements on various benches within the quarry and at various properties outside the quarry limits during the study period. The results of the OZA study indicated that ground vibration levels from blasting at the project site had not exceeded the most restrictive OSMRE levels. The OZA report is included as Appendix FF.

Hilltop Energy Monitoring Program

Historical monitoring data compiled by Hilltop Energy, Inc., for 289 blast events at the existing quarry during the period of March 25, 1996 through May 22, 1998 are summarized in Appendix GG. Comparison of this data with the maximum allowable particle velocity limits prescribed by the blasting-level chart indicates that the peak particle velocities measured at the monitoring stations were below the regulatory limits for each of the 289 blast events.

Ground motion is the most easily and consistently controlled effect of blasting. In a well-designed blast, most of the energy released when the blast is detonated will be spent fragmenting the stone, and the energy converted to vibrations will be minimized. The historical blast monitoring data indicate that ground motion generated by blasting at the existing quarry is within the regulatory limits established to prevent damage to public and private property and structures occurring in the project vicinity. Because the current blast design, execution and

monitoring methods will be continued in the isthmus area, ground-motion levels generated by blasting in the isthmus area are expected to remain within regulatory limits.

Similarly, the frequency and duration of blasting in the isthmus area, as well as the magnitude of the ground vibrations produced, will be consistent with current blasting operations. Bureau research has concluded that particle velocities of 0.5 in/s for a vibration of one-second duration should be tolerable to about 95% of the people who can perceive it. Based upon the monitoring data collected by Hilltop Energy, approximately 90% of the 289 blast events generated peak particle velocities at the monitoring points that were equal to or less than 0.5 in/s. Therefore, ground vibrations from blasting in the isthmus area are not likely to result in increased levels of annoyance to people in the project vicinity.

Vibra-Tech Engineers Blasting Study

In November 2000, Vibra-Tech Engineers performed an isoseismic survey on behalf of BCS to investigate the effects of the local geology on blast-induced ground vibration in the vicinity of the Como Park quarry and to develop blast design recommendations for optimizing blasting productivity while minimizing ground vibration impacts. The resulting report, entitled *Measurement and Analysis of Blast Induced Ground and Air Vibration in the Vicinity of the Buffalo Crushed Stone, Inc. Como Park* Quarry, is available for review at BCS's office.

The Vibra-Tech study involved the deployment of 165 tri-axial seismometers at strategic locations around the quarry. Five separate test blasts were detonated, and isoseismic maps for the five blasts were developed. All ground vibrations recorded during the blasts were in compliance with the Bureau's recommended limits. Furthermore, all of the vibrations recorded in the vicinity of residential and commercial structures surrounding the quarry were in conformance with the most stringent Bureau recommendations for residential structures. Although the magnitude of these test blasts was much less than that of production blasts at the quarry, no exceedances of the regulatory limits or damage to structures have been detected during production-blast monitoring conducted by Vibra-Tech since 2000.

Utilizing the test-blast monitoring results, Vibra-Tech developed technical recommendations for blast design to minimize impacts from blast-induced ground vibrations in the area surrounding the quarry. BCS has followed these recommendations for production blasts associated with current quarry operations and is committed to continuing these practices for production blasts within the isthmus.

Vibra-Tech Study Relating to the Schultz Landfill

In March 2001 Vibra-Tech Engineers prepared a report entitled *Blasting Effects of Adjacent Schultz Landfill and Local Aquifers* on behalf of Buffalo Crushed Stone, Inc., which is provided in Appendix HH. The report was prepared to evaluate the effects of blast-induced ground vibrations originating from the project site on the Schultz Landfill. The potential for slope failure, damage to leachate collection lines, groundwater monitoring wells and the potential fracturing of underlying bedrock was specifically evaluated. Bedrock fracturing was evaluated because such fracturing might accelerate seepage from buried waste into the underlying bedrock and into the local water table and nearby Cayuga Creek.

An isoseismic monitoring study was performed on November 30, 2000 in conjunction with the Vibra-Tech study described in the previous subsection. Three seismometers were placed along Indian Road and near the landfill site. The seismometers collected data from five separate blast events at the project site. None of the seismometers detected peak particle velocities in excess of 0.03 in/s.

The Vibra-Tech report concluded that the energy and blasting techniques utilized at the project site produced peak particle velocities that were far below the thresholds required to cause slope failures, damage to leachate collection lines and groundwater monitoring wells, and that magnitude of the blasts was insufficient to produce fracturing or deformation of stone beyond the immediate vicinity of the working face. In addition, the report also noted that previous studies by others in similar geologic settings had demonstrated that no long-term effect to the local aquifers could be attributed to blasts detonated at distances greater than 500 feet and that the Schultz Landfill was in excess of 2000 feet from the project site.

5.2.3.3.2 Minimization of Impacts from Ground Vibrations

To maintain ground vibrations below acceptable limits, BCS will continue to follow Vibra-Tech's recommendations and maximize the efficiency of all blasts and hence minimize adverse impacts from them. To do that, BCS will:

- Select proper explosive charge-weight-per-delay interval;
- Use appropriate delay intervals;
- Optimize charge confinement;
- Determine proper burden and spacing of blast holes; and
- Maintain a west-east direction of progression, to the greatest extent possible based on geology and site conditions, to avoid more heavily populated areas to the north and south of the quarry.

It is worthwhile to note that the isthmus is isolated from the perimeter or rim of the existing quarry by the presence of the east and west basins; therefore, there

is no media present to transmit ground vibrations eastward or westward beyond the site boundaries. Additionally, the areas located to the north and south of the isthmus have few potential residential receptors.

Furthermore, blasting will continue to be conducted during periods of high human activity (e.g., the noon hour) to minimize public annoyance, and BCS will perform pre-blast surveys of structures within one-half mile of the isthmus limits, upon the request of the owners or residents of existing or recently-constructed buildings, to help reduce concern relating to property damage. The results of a blast survey provide the basis for determining the presence or absence of blast-related damage throughout the life of the isthmus, and give the owner a means of documenting blast-related damage for subsequent claims.

Noise and vibration levels that are expected to be produced as a result of blasting and mining operations near the surface of the isthmus are likely to be equal to or less than what has been experienced in the past in connection with the project site. The following practices, which are detailed in Sections 3 and 5.2.3.1, and conditions support this statement:

- The blast design, execution and monitoring methods currently used at the project site will also be continued in the isthmus area. As a result, ground-motion levels generated by blasting in the isthmus area are expected to continue to remain within regulatory limits;
- The isthmus is surrounded by air on all but two sides; therefore, the potential to transmit ground vibrations through bedrock as a result of blasting and other mining activities is greatly reduced;
- The isthmus mining progression will produce working faces and benches that increase in depth, thereby increasing the shielding effect of the quarry rim as the mining of the isthmus progresses over time;
- The orientation of the working faces on the isthmus will direct the impacts of noise and vibrations to the west, where few receptors are present; and
- The existing crushing, screening and asphalt manufacturing facilities will be relocated to the floor of the east quarry, and as a result, the community will be shielded to a greater degree from noise and vibrations by the rim of the quarry and the existing perimeter buffer zones from the impacts of these operations;

### 5.2.4 Noise

Potential impacts from noise generated by routine, daily quarry operations within the context of the proposed action, as well as blasting-related noise and vibrations from production blasts on the isthmus are identified and analyzed in the following subsections.

#### 5.2.4.1 Operational Noise

To quantify the noise-related impacts associated with proposed daily mining operations associated with the proposed action, Angevine Acoustical Consultants, Inc. completed a noise assessment in December 2005. The assessment included measurements of current noise levels on the site and in the surrounding community and predictive modeling of noise levels associated with daily quarry operations, including rock drilling, on-site loading and transport, rock crushing and screening, and asphalt production. The following section summarizes the results of this assessment, which is provided in its entirety in Appendix X.

The noise environment in the community surrounding the project site was analyzed using a computerized noise model, CADNA/A v3.5.115 by Datakustik, GmbH. The software is a well-accepted, internationally-used modeling program for predicting environmental noise propagation from industrial, highway, railway and other sources. It accounts for attenuation effects of distance, buildings, terrain and other environmental and site-specific factors.

The following site-specific and community-related features were included in the model:

- Mining and processing equipment in the existing quarry locations and proposed modified locations within the existing quarry perimeter;
- The complex contours of the quarry and surrounding community;
- Traffic data representing local roadways and the quarry entrance;
- The quarry floor, faces, roadways and parking areas, which were modeled as terrain with sound-reflective surface properties;
- Buildings, stockpiles and earthen berms around the site, which were modeled as having screening effects; and
- Community terrain features, vegetation and buildings, which were modeled as having screening and absorption effects.

Individual quarry equipment was represented as radiating point sources at typical ten-meter elevations above ground elevation. The sources were assigned sound-level inputs obtained from recent equipment noise surveys at the quarry. Equipment that was surveyed included: rock drill and hammer systems (Tamrock CHA 1000, Ingersoll Rand DM25): front-end loaders (Caterpillar 992C): rear trucks (Euclid R35 and R50); front-end customer service loaders (Komatsu WA500); and a dust-suppression tank truck.

The assessment contrasted relative noise influences of quarry equipment sources and surrounding sources to existing background noise levels and limits in defined daytime and nighttime hours. To conservatively evaluate the

contribution of quarry-related noise, quarry operations were modeled the same for both daytime and nighttime hours.

The site-specific and community-related features, existing noise levels and future quarry operations were modeled. Results of the noise-modeling predictions include the overall numerical sound levels from combined sources at selected sensitive receptor locations, numerical component sound levels due to each source at each receptor and graphical sound level contours.

The outputs from the model are depicted below in Table 10. The table provides the following data:

- The survey locations used to establish the existing noise levels (discussed in Section 4.2.3.1.2) were used as receptors to predict future noise levels;
- The traffic component contributing to the background sound levels;
- The existing noise levels at the receptors attributed to the current quarry operations; and
- The predicted noise levels at the receptors for three scenarios that reflect moving the processing equipment to the east quarry basin and mining in the west basin, mining at the current top of the isthmus and mining on the isthmus at a low elevation.

**TABLE 10**

Predicted Daytime Noise Levels

Daytime Component Noise Levels from Quarry Equipment Compared to Daytime Traffic
Average A-Weighted Noise levels Predicted at Survey Locations (dBA)

| Receptor Location | Combined Traffic Sources | Existing Quarry Processing Operations with Mining in the West Quarry | Future Quarry Processing Operations Relocated to Floor of East Basin with: | | |
|---|---|---|---|---|---|
| | | | Mining in West Basin | Mining on Isthmus Initial Elevation | Mining on Isthmus Low Elevation |
| North End of Center Avenue | 53.9 | 47.7 | 43.4 | 45.6 | 41.2 |
| Hilltop Day Care Center | 57.3 | 53.4 | 45.8 | 49.8 | 43.7 |
| 550 Como Park Boulevard | 58.9 | 51.1 | 50.3 | 54.2 | 50.8 |
| 43 Center Avenue | 57.5 | 45.3 | 38.4 | 34.1 | 29.6 |
| Ukrainian Orthodox Church | 49.3 | 46.6 | 34.8 | 41.9 | 34.2 |
| Mitchell Hospice | 57.5 | 47.4 | 34.8 | 41.1 | 36.4 |
| West End of First Street | 48.3 | 54.8 | 52.0 | 53.2 | 52.8 |
| West End of Second Street | 48.8 | 58.5 | 57.7 | 58.8 | 56.4 |
| 44 Rowley Hollow | 44.6 | 45.7 | 36.6 | 41.7 | 41.0 |
| Old Indian Road at Broadway | 74.2 | 46.7 | 39.8 | 39.9 | 40.1 |
| Senior Citizens Center of Broadway | 59.9 | 49.2 | 29.2 | 40.4 | 32.7 |

The noise assessment concluded that the proposed modification to daily operations at the Como Park Quarry will not generate perceptible increases in either quarry component noise levels or total community noise levels at surrounding receptor locations. Specific findings of the assessment are that:

- Component noise levels from quarry equipment operating within the facility boundaries will not exceed the Town's noise level limits.
- Minor exceedances of the Town's noise law limits may occur in defined nighttime start-up operations.
- Community noise level changes from proposed quarry modifications, in accordance with the evaluation criteria, will not be perceptible and will have no appreciable effect on receptors.
- Relocation of quarry processing equipment to the floor of the east basin will provide small decreases in the overall community levels for most receptors as a result of increased distances and increased shielding from quarry topography.
- Limited increases in noise may result at a few receptors as the isthmus is initially mined. NYSDEC noise assessment guidelines categorize the anticipated noise level changes as imperceptible.

In conclusion, the assessment indicates that the proposed modifications to quarry operations will not have a significant adverse impact on noise levels.

5.2.4.2 Blasting Noise

In order to evaluate potential impacts from airblast associated with production blasts on the isthmus, air overpressure levels at nearby receptors were calculated for blast events centered at several locations along the southern-most margin of the isthmus. The following standard airblast attenuation formula was used to calculate the air overpressure at nearby receptors assuming a charge weight of 200 lbs/delay:

$$PO = \left[ \frac{D}{\sqrt[3]{w}} \right]^{-1.1}$$

Where: D = Distance
W = Charge weight

Figure 13 shows the locations of the blast events used in the calculations as well as the nearby receptors for which air overpressure levels were calculated. The resulting data are presented in Table 10 and indicate that air overpressure levels are predicted to be well below the OSMRE regulatory limit of 133 (± dB) at the closest structures, which are located within 740 feet of the blast locations. Therefore, no damage to nearby structures is expected to occur as a result of blasting on the isthmus.

| TABLE 11<br>PREDICTED AIR OVERPRESSURE LEVELS | | | |
|---|---|---|---|
| **Blast Location** | **Receptor Location** | **Distance from Blast (ft)** | **Predicted Air Overpressure Level (dB)** |
| 1 | A | 1070 | 121 |
| 1 | B | 740 | 124 |
| 1 | C | 1300 | 119 |
| 2 | B | 780 | 124 |
| 2 | C | 890 | 122 |
| 2 | D | 1370 | 118 |

Using the standard airblast attenuation formula listed above and the anticipated charge weight of 200 lbs / delay, it was determined that air overpressure levels between 120-124 dB will be experienced at receptor locations occurring within 1200 feet of the blast location. Consequently, blasting that occurs closest to the southern and eastern limits of the isthmus may produce annoyances in some residents living close to the quarry (fewer than ten residences fall within a 1200-foot radius of the Blast Locations 1 and 2). However, with the exception of receptors located immediately south of the isthmus, which are limited to commercial receptors, blasting on the isthmus will be more distant than blasting along the currently permitted perimeter of the existing quarry.

BCS has committed to adhering to the blast design and technique recommendations issued by Vibra-Tech, which have proven successful in minimizing the effects of airblast. Therefore, mining of the isthmus is not expected to have any significant adverse impacts related to air overpressure. In addition, blasting operations that are anticipated to occur in connection with the mining of the isthmus will occur on a north-south oriented working face, with the actual blast face oriented to the west. As the limestone is blasted, the working face will progress in an easterly direction. The advantages of this progression are three-fold:

- The air overpressure events generated during blasting events will be directed to the west, toward an area where few receptors are present;
- As mining of the isthmus progresses to the east, the distance between potential receptors and the working face will increase, thereby incrementally increasing the attenuation of the air overpressure events; and
- As mining of the isthmus progresses downward, the shielding effect of the rim of the quarry will also attenuate the air overpressure events.

Furthermore, airblast control measures have been effectively used at the existing quarry and will continue to be employed on the isthmus. These control measures include:

- Avoiding blasting during unfavorable weather conditions such as overcast skies and haziness with no wind because such conditions can magnify the effects of air overpressure;
- Proper stemming of drill holes to an adequate depth;
- Maintaining proper burden, which is the distance between blast holes in the direction of the free face of the rock, and spacing;
- Re-orienting any high free face away from populated areas;
- Appropriate delay (i.e., actuation of the propellant-actuated devices and ignition of the propellant); and
- Blasting during periods of high human activity (e.g., the noon hour) rather than during customary quiet times (e.g., 5:00 PM – 7:00 AM)

### 5.2.5 Visual and Aesthetic Resources

In general, a visual impact consists of two main components: the change to the visual setting and the viewer's response to that change. Changes in the visual resource would include changes in both the character and quality of the resource. A change in the character would pertain to inconsistency with existing landforms and land use, while a change in quality would reflect substantial alterations to existing viewscapes or lines of sight. Viewer response depends on exposure, which is determined by the type and number of viewers, line of sight, and distance.

As stated in Section 4.2.4, features of the project site that are observable from area roadways, businesses and residencies include portions of the asphalt and crushing plants, stone piles, and the scale house at the entrance to the project site. The proposed action will transform the isthmus from a materials-processing and storage area to an area of open mining. Because the mining activities associated with this action are consistent with existing mining activities to the east and west of the isthmus, the character and quality of local visual resources will not change. The proposed action will also include moving the existing stone-processing and asphalt plants into the east quarry basin, which is approximately 150 feet below the existing surface elevation. Because these plants will be moved to a location that is below the existing surface elevation, views of these features from surrounding roadways, businesses and residencies will be eliminated. Of the now-visible site features, only the scale house will be visible following implementation of the proposed action.

To illustrate views of the project site from surrounding roadways, businesses and residences following implementation of the proposed action, photo-simulations of proposed conditions were developed for the same views discussed in Section 4.2.4. These photo-simulations are presented in Appendix Y, and reflect the movement of the asphalt and crushing plants into the east quarry basin. These photographs were altered to remove views of the asphalt and crushing plants as well as stone piles, which will no

longer be visible from the locations from which these photographs were taken because these features will be moved approximately 150 feet below the existing surface elevation.

Additionally, to determine potential viewer response to the visual changes associated with the proposed action, a viewshed map identifying areas from which the isthmus will be visible was constructed (See Figure 14). The viewshed map was developed using aerial photography, topographic mapping and field reconnaissance of the project area, and considers all of the existing berms at the project site. The field reconnaissance showed that areas surrounding the project site where the current vegetation (mixed deciduous and coniferous trees and shrubs) is 100-feet thick or greater effectively obscures the view of landforms and equipment of equal or lesser height within the project site. With the exception of the landfills to the east and the Cayuga Creek Channel, the area around the project site is relatively flat. Because of this, topography was not a significant factor in the viewshed map development.

As reflected by the viewshed map and the photo-simulations of proposed conditions, existing vegetation and earthen berms located along the perimeter of the project site significantly limit the area outside of the project site from which the isthmus would be visible. BCS owns a majority of these perimeter parcels. Retention of vegetation within this perimeter, which is on average 200-feet or more in thickness, will limit visual receptors to the following:

- Two residences on Second Street, one of which is a rental property owned by BCS;
- Motorists on Como Park Boulevard passing the quarry entrance; and
- Employees and those performing environmental monitoring at the Shultz Landfill while involved in activities on higher elevations of the landfill.

Vegetated parcels not owned by BCS are located to the north and south/southeast of the project site and are comprised of a railroad corridor and residential properties respectively. Residents in these areas wishing to retain this visual buffer will likely keep the existing vegetation in place. Users of the railroad corridor are considered transient and intermittent and therefore, are not considered sensitive visual receptors.

Of this small group of visual receptors, residents are considered to be the most sensitive because of the greater frequency and duration of viewing. Conversely, motorists are considered to be the least sensitive because of the short duration that they may be exposed to views of the isthmus, and the nature of the activity in which they are involved. For example, motorists traveling on an approximate 200-foot segment of Como Park Boulevard near the quarry entrance would be able to view the scale house and gate for less than four seconds at 35 miles per hour. Based upon the nature of their activities while viewing, receptors at the Schultz landfill are not considered to be sensitive to visual changes associated with the project.

Despite the high sensitivity of residential receptors, the degree and quality of change in the view from the Second Street residences are considered to be small because these receptors are currently exposed to partial views of the existing quarry to the west. The same is true for the motorists on Como Park Boulevard that are currently exposed to limited views of the existing quarry via the entrance road.

The primary means by which visual impacts associated with the project will be minimized is the retention of the existing perimeter vegetation. This measure will limit the number of sensitive visual receptors to the residences situated on Second Street. Views afforded to other less sensitive receptors, such as area motorists, are also substantially limited by this measure. Finally, because the proposed action includes moving the stone-processing plant and existing asphalt plants from their present locations into the east quarry basin at the existing floor level which is approximately 150 feet below the surface, views of the quarry and on-site equipment will be substantially reduced, resulting in a positive visual impact.

### 5.2.6 Cultural Resources

In July 2005, TVGA on behalf of BCS submitted to the New York State Office of Parks, Recreation and Historic Preservation (OPRHP), a request for an opinion whether the proposed action would impact cultural resources in or eligible for inclusion in the State and National Registers of Historic Places.

On August 26, 2005, the OPRHP responded to the request and provided their opinion that the proposed project will have no impact upon cultural resources in or eligible for inclusion in the State and National Registers of Historic Places. The OPRHP determination is provided in Appendix Z.

### 5.2.7 Socioeconomic Considerations

The proposed action is intended to extend the productive life of the quarry and enable the continued supply of crushed stone products to satisfy regional demands for the construction and maintenance of infrastructure, as well as for other public, commercial, private and residential construction work and maintenance.

The presence of extensive processing and distribution facilities at the existing quarry, as well as its proximity to the New York State Thruway and ease of access to major urban and suburban population centers in the region, also make this site an ideal location for continued operation.

The following direct economic benefits associated with the current quarry operations are applicable to the proposed action in that extension of the life of the mine extends the benefits:

- Wages, taxes and benefits to employees of the Como Park quarry are $1.7 million;
- School and property payments are $235,000; and
- Purchases and other expenditures for outside sales and services total $7.1million.

The figures are annual and provided in 2004 dollars.

5.2.7.1 Residential Property Values

The Residential Property Value Impact Study evaluated these four key issues:

- Correlation between property values and proximity to the project site;
- Average marketing time for home sales;
- Average annual listing price; and
- The perceived affect the project site has on prospective home purchases in the project vicinity.

The Residential Property Value Impact Study revealed the following:

- No direct correlation between property values and their proximity to the project site;
- The average marketing time for home sales in the vicinity of the project site was consistent with the marketing time for home sales outside the vicinity of the project site;
- Current market sales within the project vicinity have shown an annual average listing price increase of approximately $5,000 per year, which was found to be consistent with the average annual increase of homes outside the project vicinity; and
- Consultation with real estate agencies conducting home sales in the vicinity of the project site found that the project site has had minimal to no impact on a prospective buyer's decision to purchase a home in the project vicinity.

In conclusion, the study found that the analysis of sale/resale history, current market sales and marketing time did not identify any adverse impacts on the market values of the residential properties in the project vicinity. Therefore, it is not anticipated that implementation of the proposed action will have any significant adverse effects on future market values of the residential properties in the project vicinity.

## 6.0 UNAVOIDABLE ADVERSE IMPACTS

The impact analysis section of the DEIS (Section 5) discusses potential environmental impacts, their significance and mitigation measures where applicable. BCS will adhere to current operating practices, permit conditions and other requirements to ensure impact avoidance and minimization as previously discussed.

The following section identifies and briefly summarizes those adverse environmental impacts that cannot be avoided or fully mitigated if the proposed action is implemented. None of the impacts has been determined to be significant. They are discussed here to satisfy SEQRA DEIS requirements.

- **Air Resources -** Occasional hydrogen sulfide odors near the quarry sump discharge outfall might be perceived during the time the isthmus-related mining activities are undertaken. This is a continuation of the current impact for which BCS has mitigated the odor to the extent feasible and will continue to do so. Despite sound dust suppression practices, the loading of stone products into customer trucks can occasionally create a localized dust plume. In addition, dust will continue to be generated by blasting. The impact of these will be limited by vegetated buffer zones and earthen berms when the isthmus is initially mined and will be further confined as mining progresses deeper into the quarry.
- **Ecological Resources** - The mining of the isthmus, and the associated reclamation plan, will convert the existing terrestrial ecosystem on the isthmus to an aquatic ecosystem. This is also the case for the west and east basins within the current and the proposed reclamation plans. No critical, highly valuable or unique habitats or state-listed threatened or endangered species or ecological communities exist on the isthmus.
- **Geology -** The proposed action will increase the size of the topographic depression at the existing quarry and will permanently remove the limestone bedrock within the isthmus area to a depth of approximately 150 feet. Reclamation of the quarry, as per the plan that accompanies the application for permit modification, calls for the creation of one lake, which would cover the (former) isthmus area.
- **Noise -** Noise from initial land preparation activities and mining operations on the upper-most bench will be slightly greater than current noise levels at some residential receptors on the eastern boundary. However, the increase in noise level is considered negligible (less than one decibel) and will be temporary. The quarry operation's contribution to background noise levels will continue should the proposed action be approved. Blasting that occurs closest to the southern and eastern limits of the isthmus may produce annoyances is some residents living close to the quarry. However, blasting on the isthmus will be more distant from residential receptors than blasting along the currently permitted perimeter of the existing quarry.
- **Traffic -** The production rate at the quarry will remain constant with the proposed action. The proposed action will extend the life of the mine but not increase the rate of mining or processing. Therefore, quarry-related traffic will not increase if the proposed action is implemented. However, the proposed action will extend the period during which quarry-related truck traffic is on area roadways.

- **Vibration -** The proposed action will extend the life of the mine by approximately 20 years, with an associated extension of the years blasting will occur. No increase in the magnitude or severity of blasting effects are planned or anticipated as a result of the proposed project because the current methods of blast design, execution and monitoring will be followed. The methodologies have been proven effective in maintaining compliance with applicable regulatory limits for flyrock, air overpressure and ground vibrations. Also, the isthmus is surrounded by air, and not rock, on all but two sides. Air will act to attenuate blasting effects. However, the subjective negative responses to the blasting as experienced by some members of the neighboring community are expected to continue.
- **Water Resources -** Mining of the isthmus will continue the depression of groundwater levels in the bedrock underlying the quarry and will slightly modify on-site surface water drainage patterns. Neither impact is considered significant. No off-site impact to water quality is anticipated.

## 7.0 ALTERNATIVES

As required by SEQRA, this section identifies and comparatively analyzes a range of reasonable alternatives that are feasible considering the objectives and capabilities of BCS. The range of alternatives analyzed is limited to the "no action" alternative and those reasonable alternatives that, if implemented, would achieve the same or similar effects and result in the same or a reduced level of impacts. The level of detail provided in this analysis is intended to permit a comparative assessment of the alternatives discussed, which include the following as identified via the SEQRA scoping process:

- No Action
- Alternative Scale or Magnitude
- Alternative Use
- Alternative Sites
- Alternative Configurations
- Alternative Technologies

### 7.1 No Action

The "no action" alternative, also referred to as the "no build" alternative, would involve the continued mining and operation of the project site in accordance with the existing Mined Land Reclamation Permit for the duration of the life of mine. Under this alternative, the proposed action would be abandoned and the crushing and asphalt plants would not be relocated from the isthmus, nor would the isthmus be quarried. Mining of the site would continue until all permitted reserves have been removed, the time frame for which is estimated at 20 years based upon current production rates. Operation of the asphalt plants on the isthmus would continue following the cessation of active mining until the processed aggregate, which is from the Como Park quarry and used in aphalt production, is diminished. A NYSDEC-approved Mined Land Reclamation Plan would be implemented following the completion of active mining.

The no action alternative is not considered a reasonable alternative to the proposed action because it does not address BCS's primary objective, which is the continued viability of their core business involving the extraction, processing and sale of mineral resources. The proposed action, on the other hand, is a key element of satisfying this objective through the sustained operation of BCS's existing Cheektowaga quarry via the mining of land located within the quarry boundaries and acquired expressly for this purpose. Therefore, the discussion of the no action alternative is provided only for the purpose of assessing the severity of the environmental impacts associated with the proposed action.

Activities associated with the continued operation of the existing quarry, including stone extraction, processing and distribution and asphalt production and distribution would continue under the no action alternative. Stone would continue to be processed and stockpiled on the isthmus, and asphalt production via the plants located on the isthmus

would also continue. However, the following impacts associated with the proposed action would not occur:

- Extraction of the mineral resources from the isthmus;
- Enlargement of the topographical depression associated with the existing quarry by connecting the east and west basins to create a single basin;
- Extension of the life of the mine by approximately 20 years;
- Extension of dewatering of, and the depression of water levels in, the bedrock aquifer underlying the isthmus and surrounding area;
- Modification of on-site surface water drainage patterns; and
- Removal of less than five acres of vegetation.

As discussed in Section 5, however, analyses of these potential impacts indicated that they are inconsequential.

Because the stone crushing and asphalt plants would not be relocated into the east quarry basin, the shielding effects of the existing quarry walls on noise generated from these facilities would not be realized. Similarly, existing views of said equipment from the surrounding area would remain.

In addition to those natural impacts listed above, not mining the isthmus would mean that 10,000,000 tons of high-quality aggregate would not be available from this quarry to supply the future demands of the local market. As such local market demands would have to be satisfied by other sources after the permitted reserves are exhausted. This could potentially translate into the following:

- Increased regional air pollution associated with the transport of aggregates from more distant sources; and
- Increased construction costs and public expenditures on construction projects resulting from the higher cost of obtaining and transporting aggregates from more distant sources.

The no action alternative would also result in the earlier termination of quarry-based employment and other contributions to the local economy.

It should also be noted that the no action alternative is not consistent with the Town's planning objective of limiting mining activity to Special Aggregate Districts. If the reserves within the Special Aggregate District are not fully extracted, it is reasonable to assume that reserves outside of the district will become more valuable (due to decreased supply and steady demand). With that, owners of those out-of-district reserves will be more likely to consider exploiting them, and such activity could induce other environmental impacts especially if undertaken at a currently undeveloped or greenfield site.

## 7.2 Alternative Scale or Magnitude

The SEQR process provides for an analysis of variations to the proposed action in terms of scale or magnitude that, if implemented, would achieve the same or similar effects and result in the same or a reduced level of impacts. In evaluating alternative smaller scale or magnitude actions, such considerations must meet the functional minimum of the project.

The physical constraints of the isthmus (i.e., being bound to the north by the railroad and to the east and west by the existing quarry basins) eliminate the possibility of increasing the scale of the mining operation in this area. Therefore, this analysis focuses on smaller scale variations of the proposed action.

Development at a lesser scale or magnitude is defined here as partial mining of the isthmus. To mine the isthmus at any scale, the processing equipment and asphalt plants would need to be relocated. Such an action would also require modification to the current Mined Land Reclamation Permit. A smaller-scale project would achieve only a minor reduction of impacts compared to the proposed action, including:

- The extent of the topographical depression would be reduced;
- The duration of mining within the isthmus would be reduced. (Note that the continuation of current stone-extraction, material-processing and distribution activities would continue during the currently permitted life of the mine); and
- The dewatering of the quarry and depression of water levels in the bedrock aquifer underlying the surrounding area would be extended to a lesser extent.

Additionally, the alternative would reduce the labor requirements at the quarry resulting in decreased employment opportunities in the Town of Cheektowaga.

The extent of the isthmus to be mined must be sufficient to justify the substantial cost of relocating the processing and asphalt plants, while providing an acceptable return on BCS's investment. The partial mining of the isthmus would result in a decrease of the return on BCS's investments and only partially realizes BCS's goal of sustaining operations at the Como Park site.

Given that partial mining of the isthmus does not provide any substantial benefit in terms of reducing environmental impacts when compared to the proposed action, and that this alternative does not fully satisfy BCS's return on investment requirements, this option is not considered to represent a reasonable alternative.

## 7.3 Alternative Use

The Town of Cheektowaga Zoning Ordinance (Section 260 – 38) permits the following uses within a Special Aggregate District:

- Principal Uses: quarrying or excavation of gravel or stone, but not including topsoil removal for sale; and manufacturing of bituminous products, but only such products which incorporate the use of aggregates mined on the premises for paving; and
- Accessory Uses: office or storage buildings for personnel and equipment associated with the quarrying, excavation or processing; stone crushing, screening or washing of aggregates mined on the premises; storage of trucks and other machinery associated with the mining, processing and transportation of the aggregates, but in such a manner as to be completely screened from view from adjacent streets; and signs, as permitted and regulated by this chapter.

With the exception of the extraction of mineral resources and the manufacturing of bituminous products, no viable alternative uses are consistent with the Town of Cheektowaga zoning regulations for the project area.

BCS's business centers on the extraction, processing and sale of mineral resources from their existing quarries and mine sites in western New York. The value of the limestone reserves contained within the isthmus exceeds the land value of the project area if it is redeveloped for some alternative use and is not mined. Therefore, no economic incentive exists for BCS to develop alternative uses that are beyond the sponsor's capabilities and objectives. It is a reasonable expectation that the reserves will be mined to meet market needs.

Also, according to the SEQRA Handbook, which is available at the NYSDEC office, an entirely different action (i.e., use of the site in this instance) may be reasonable if:

1. The Project Sponsor has a diverse range of development experience or typically sponsors a number of different types of developments;

2. The proposed action does not conform to the current zoning at the site; or

3. Alternative action to be considered may produce significantly fewer impacts while not significantly changing the overall objective of the proposed action.

Based on the current site zoning and BCS's sole business objective, alternative uses of the site are not reasonable. It is also worthwhile to note that the physical characteristics of the isthmus limit its potential for alternative use. These limitations include:

- The vertical mine faces on the east and west sides of the isthmus, and the ongoing mining activities occurring within the adjacent quarry basins pose significant safety and security issues relative to the alternative use of this area;
- The isthmus is essentially isolated by the existing railroad corridor and active mining areas within the east and west quarry basins, and access is only available by the access road that leads from Como Park Boulevard;

- With the exception of electricity and an access road, no other utilities or infrastructure are currently available on the project site to support alternative development; and

## 7.4 Alternative Sites

The mining of the isthmus is inextricably tied to a natural resource located at this particular site. Therefore, for another site to be considered, it must contain the same quantity and quality of the resource of interest. Furthermore, consideration is limited to those sites owned or under option by BCS.

A NYSDEC ruling in the matter of the application of *Dalrymple Gravel & Contracting Company, Inc. for a Mined Land Reclamation Permit for a proposed mine in the Town of Erwin, Steuben County, NY, pursuant to Article 23, Title 27 of the Environmental Conservation Law, dated September 25, 2001* discussed the requirement for adequate evaluation of reasonable alternative sites for a proposed gravel mine on a site that had not been previously mined. The ruling stated; "While the format of a DEIS is flexible and need not be encyclopedic, certain elements must be included within it, among them an adequate discussion of alternative sites for the proposed activity. As 6 NYCRR 617.9(b)(5)(v) mandates, the DEIS must contain a "description and evaluation of the range of reasonable alternatives to the action which are feasible, considering the objectives and capabilities of the Project Sponsor. The description and evaluation of each alternative should be at a level of detail sufficient to permit a comparative assessment of the alternatives discussed". In accordance with 6 NYCRR 617.9(b)(v)(g), for a private sponsor such as the applicant, such site alternatives can be limited to parcels owned by or under option to the applicant."

Also, as clarified in the Administrative Law Judge's Ruling in the Gernatt Asphalt Products, Inc. matter dated March 3, 1994, it is reasonable to consider only those sites that could sustain existing operations within the same market area; that is geographic limitations on alternative sites is acceptable. BCS has several holdings in Western New York. Of those, the Wehrle Drive quarry along the Lancaster / Clarence border is the only BCS property, other than the project site and adjacent parcels owned by BCS, that contains materials that meet the Type 1 friction aggregate requirements of the NYSDOT.

The Dalrymple and Gernatt decisions are provided in Appendix II.

With the noted considerations, two scenarios are presented for the evaluation of alternative sites: the lateral expansion of the Como Park quarry and the lateral expansion of the Wehrle Drive site.

### 7.4.1 Como Park Quarry Expansion

The bedrock geology and high quality of the limestone that underlies the area, coupled with the local market for aggregate and asphalt products, make further development of

the Como Park quarry site desirable. As such, mining of BCS-owned properties adjoining the existing quarry was the subject of an application for re-zoning submitted to the Town of Cheektowaga in 1998, as well as ongoing litigation between BCS and the Town. The re-zoning application is available at the Town of Cheektowaga offices, 3301 Broadway, Cheektowaga.

The application for re-zoning focused upon the lateral expansion of the existing quarry to include mining of three substantially undeveloped parcels that adjoin the existing quarry, are owned by BCS, and occupy approximately 140 acres. Additionally, the closure of a segment of Indian Road was proposed in connection with this expansion. The quarrying of portions of two of these parcels is currently authorized under the NYSDEC Mined Land Reclamation Permit for the existing quarry; however, all three of these parcels must be re-zoned, according to the Town, from the existing classifications, which include 87.01 acres of Light Manufacturing District (M1), 38.57 acres of Residence District (R), and 14.97 acres of Neighborhood Service District (NS), to Special Aggregates District (AG) in order to accommodate this alternative. This discrepancy between the Mined Land Reclamation Permit and the Town zoning ordinance is the subject of the ongoing litigation.

As proposed, the actual mining area would occupy less than 50% of the 140 acre expansion area, thereby increasing the life of mine area of the existing quarry by 68.7 acres and extending the life of mine by approximately 40 years. The undeveloped portions of the remaining acreage, which amount to approximately 71.8 acres, would remain undeveloped to function as a natural, perimeter open-space buffer area. As with the proposed action, the intent of the expansion was to extend the life of the quarry without an increase in the rate of production. It did not involve the expansion of, or additions to, the existing processing equipment, asphalt plants, buildings, support equipment or lighting. Instead, the use of these facilities and equipment would remain consistent with that currently occurring at the existing quarry, as would the rate of production.

Activities to be carried out on the adjoining parcels would be limited to the clearing and grubbing of vegetation, the removal of overburden, the construction of earthen berms, and the extraction and removal of limestone. These activities would be undertaken in a manner consistent with current operations of the existing quarry. Processing and distribution of the limestone, as well as the production and distribution of asphalt, would continue to be performed on the existing quarry site using the present facilities and equipment. Reclamation of the expanded quarry would involve the redistribution, grading and re-vegetation of overburden on disturbed areas occurring along the perimeter of the quarry, and the conversion of the quarry to a condition suitable for a future productive use. The lateral expansion would satisfy the following criteria:

- Compliance with both New York State mining regulations and open space requirements specified in the Town of Cheektowaga zoning law by establishing a 200-foot setback between the perimeter of the mine and adjacent property lines;

- Avoidance or minimization of significant adverse environmental impacts through the formation of a natural perimeter open space buffer area ; and
- Compliance with the minimal acceptable size for achieving a satisfactory return on investments in land, equipment and facilities made by BCS.

The future consequences of developing the adjoining properties for mining would include:

- The reduction of the amount of vacant land remaining in the Town of Cheektowaga;
- The loss of vegetation and wildlife habitat within the 68.7 acre footprint of the mined areas, as well as the elimination of 2.54 acres of wetlands consisting primarily of numerous small, seasonally saturated or infrequently inundated, depressional wetlands;
- The enlargement of the topographical depression associated with the existing quarry;
- The extension of the life of mine by approximately 40 years, resulting in the continuation of current rock extraction, material processing and distribution activities;
- The further dewatering of the quarry, and depression of water levels in, the bedrock aquifer underlying the surrounding area during the mine life; and
- A reduction in the availability of land in the vicinity of the quarry for post-reclamation development.

Given that the lateral expansion of the existing Como Park Boulevard quarry would result in more extensive impacts than the mining of the isthmus, this alternative does not appear to be a reasonable substitute for the proposed action.

### 7.4.2 Wehrle Drive Quarry

The Wehrle Drive facility is an active limestone quarry located at 8515 Wehrle Drive, Clarence, New York that is owned and operated by BCS. A portion of the property is situated in the Town of Clarence and the remainder occurs in the Town of Lancaster. The Wehrle Drive quarry site is bounded to the west by commercial and residential properties that border Harris Hill Road, Wehrle Drive to the north, undeveloped land to the east, and the New York State Thruway to the south. By major roadways, it is situated about ten miles northeast of the Como Park Boulevard quarry. Substantial residential development has occurred immediately to the north of the quarry, between Wehrle Drive and Main Street.

The Wehrle Drive facility includes a crushing and screening operation that produces construction aggregates and aggregate for the manufacture of hot mix asphalt. The facility also has an asphalt batch plant and two asphalt drum plants. It is referred to as Buffalo Crushed Stone Plant #23 and is permitted to operate in accordance with NYSDEC permits and town codes. BCS controls 922 acres on the site. Of those, 616

acres are permitted for mining. All permitted acreage is in the portion of the site located within the Town of Lancaster. The zoning for the permitted acreage is Special Aggregate District. The non-permitted acreage is in an Industrial/Commercial district. Mining is not an allowed use within the latter district.

BCS intends to exhaust all of the permitted reserves at the Wehrle Drive quarry, and also acquired the land adjacent to the permitted mine limits for the purpose of extracting the limestone resources. As such, the value of these mineral resources does not constitute a surplus asset that could be utilized as an alternative to those associated with the proposed action. Instead, both resources are effectively encumbered by BCS's business objectives. Furthermore, the lateral expansion of the Wehrle Drive quarry would push the mining area beyond the current Special Aggregate District. This would necessitate the re-zoning of the targeted acreage and result in impacts that are expected to exceed those associated with the proposed action, which does not require a zoning change and is wholly situated within the limits of an active quarry.

The Como Park quarry services primarily projects in southern and western New York, whereas the Wehrle Drive quarry primarily services projects to the east and north. To cease operations at the Como Park site and supply all projects from the Wehrle Drive quarry would inflict an approximately $1.00 / ton cost increase on products and due to increased transportation costs, based on the 13-mile distance between the two locations. In addition, the additional mileage would generate more air emissions (i.e., truck exhaust) and increase operational demands on resources such as fuel, tires and other truck maintenance items.

For the reasons discussed above, the lateral expansion of the Wehrle Drive quarry as opposed to utilizing the ready reserves at the Como Park quarry as proposed in the permit modification is not considered to represent a reasonable alternative.

## 7.5 Alternative Configuration

Several alternative layouts were identified during the formulation of the proposed action. Based upon the nature of the mining component of the proposed action, which involves the removal of a fixed mineral resource, alternatives focused on other possible options for relocating the crushing and asphalt plants. These are described below.

The relocation of the existing processing and asphalt plants into the western quarry basin was considered. This is alternative configuration would satisfy set back requirements and is feasible given the existing site conditions and land use regulations. The western quarry basin, however, has not yet been mined to the extent and depth of the east basin. Furthermore, the west basin contains the primary dewatering sump for the quarry. Based upon these constraints and the lack of any relative benefits in terms of environmental impacts over placement of the quarry in the east basin, this alternative was not advanced.

Another alternative configuration that involved the relocation of the existing asphalt production facilities to the northeast of the existing quarry onto properties owned by BCS was conceived and discussed informally with the Town of Cheektowaga. This alternative would have placed the asphalt plants below ground level to the north of Indian Road and included the relocation of the site access road to provide entry from Indian Road via Broadway (NY Route 130), a state highway that was recently reconstructed and widened. The stone-processing plants would not have been moved. This alternative would have re-routed quarry-related traffic off of Como Park Boulevard and onto Broadway and Indian Road. However, this alternative configuration is not considered feasible because it would require a special use permit and was previously opposed by the Town of Cheektowaga, making Town approval unlikely.

The third alternative configuration considered was moving the quarry entrance to Indian Road, along with relocating the asphalt plants and stone-processing facilities to the eastern basin.

One consideration in evaluating the relocation of the ingress/egress road to route quarry traffic to Indian Road is the distance the on-site traffic travels along the quarry rim. For safety reasons, BCS wants to minimize the extent to which the access road runs adjacent to the quarry rim. A northern routing, which would route truck traffic along a north /south running haul road into and out of the quarry and then along an ingress/ egress route along the northern boundary to an intersection with Indian Road, would require that the trucks travel along more of the quarry rim than a southern routing. Due to the significant safety consideration, and the lack of an adequate right-of-way along the northern quarry boundary, the northern routing alternative was not evaluated further.

Establishing the southern routing to a quarry entrance along Indian Road would involve:

- Disassembling, re-installing and re-certifying the scale house;
- Installing water, electrical, sanitary sewer service and telephone service to the new scale house location;
- Establishing a new ingress/egress road (crowned) along the south east and east quarry perimeter, which includes removing vegetation along the eastern perimeter;
- Connecting the internal ingress/egress road to Indian Road with a skewed intersection;
- Installation of guide rails or other barrier along a portion of the quarry rim;
- Construction of retaining wall along the east boundary of quarry near the last (most west) home on Second Avenue; and
- Possible reconstruction of Indian Road to accommodate the heavy truck traffic. Note that Indian Road is posted with a 5-ton limit from its intersection with Como Park Boulevard to immediately west of the NYSDOT facilities near the intersection with Broadway.

The alternative configuration to provide the access location on Indian Road is depicted in Figure 15.

Due to the nature of traffic that will be utilizing this new location, truck templates were created to study the turning movements and radii required for safe truck operations through the proposed Indian Road intersection and on the ingress/egress road. These turning movements were studied with the assumption that the truck traffic will be traveling to and coming from the north of the proposed intersection. In addition, sight distances were evaluated to identify safety concerns, if any, related to the proposed access configurations.

The evaluations indicated that a skewed intersection for the proposed access on Indian Road, which is preferred by BCS for truck operational purposes over a "T" intersection, is feasible. The angle of the intersection skew is maintained at 30 degrees (from the right angle). As per the New York State Highway Design Manual, intersections with this skew angle do not significantly increase crossing distance or decrease visibility and can be a safe, adequate design. Intersection sight distance was also evaluated for this alternative. This sight distance was evaluated for the trucks to safely make the left turn from the new access location and cross into the right lane of Indian Road. The available sight distance for trucks stopped at the proposed intersection waiting to turn left is approximately 970 feet to the left and 1200 feet to the right. The required sight distance for trucks to turn left on Indian Road with the Indian Road traffic traveling at 35 mph, as per "A Policy on Geometric Design of Highways and Streets by American Association of State Highway and Transportation Officials" is 600 feet. Therefore, this configuration provides the stated sight distance for trucks to safely turn left on Indian Road. The right-turn sight distance for truck traffic is not applicable because trucks would be routed to the east to State Highway 130 (Broadway) and would not turn right out of an entrance on Indian Road.

This alternative configuration presents both beneficial and adverse impacts in comparison to the proposed action. The impacts are described below:

- The benefit of this alternative is alleviating residents' general concerns with having truck traffic along the residential portion of Como Park Boulevard west of the quarry entrance;
- This configuration increases mileage for south and west-bound trucks (the majority) and decreases mileage for east and north-bound trucks. The operators of the trucks (not BCS) bear the economic impact of the mileage differential.
- Mileage is directly correlated with air emissions, as such this configuration increases the air emissions from south and west-bound trucks (the majority) and decreases air emissions from east and north-bound trucks.
- Quarry traffic will travel in closer proximity to the residential noise receptors along the southern and southeastern quarry perimeters.
- The ingress/egress road is longer than that in the proposed action, requiring more resources and time for construction and maintenance;

- Access to the currently permitted mineral reserves under the new access road and relocated scale house is eliminated; and
- Possible reconstruction of Indian Road to accommodate the heavy truck traffic.

Although a social benefit is presented by this alternative configuration ( see first bullet above), it presents no net environmental benefit over the proposed action and presents a considerable economic impact to BCS (estimated at approximately $1,000,000 to implement). For the latter reasons, it is not considered a reasonable alternative to the proposed action.

It is noted that BCS previously explored using Indian Road as the main entrance and exit from the quarry, with the closure of Indian Road to the general public from a point north of Second Street. BCS requested the closure of Indian Road in its proposal to minimize the interaction of quarry-related trucks on a local road prior to their entrance onto a state highway. In the proposal, BCS was to assume responsibility for the maintenance of Indian Road. BCS discussed this alternative with the Town of Cheektowaga as well as transportation officials and emergency service providers. The Town opposed the closure of Indian Road and the proposal was therefore not further pursued by BCS.

## 7.6 Alternative Technologies

For purposes of evaluating the proposed action, with the presumption that the modification would be approved, alternative technologies for quarrying and movement and handling of limestone were investigated. As discussed in the environmental impact analysis, the proposed action is not associated with any significant adverse environmental impacts. In addition, BCS has a history of adopting favorable technologies. Their compliance record and business success demonstrate this.

The review of alternative technologies was limited to those technologies that are proven effective, have the ability to avoid or significantly reduce the potential health or safety impacts of the proposed action and are not cost-prohibitive. The alternatives were evaluated in the context of process improvements and focused on alternatives to drilling, blasting, loading and movement of the limestone from the mine face to the processing facilities. The following paragraphs discuss the alternative technologies reviewed.

### 7.6.1 Drilling and Blasting

Alternative technologies for the fracturing and removal of limestone and other consolidated materials are generally limited to the mechanical fracturing of material using pneumatically or hydraulically driven hammers. In order for these technologies to be considered as replacements for drilling and blasting, they must be capable of eliminating or reducing noise and vibration levels while maintaining acceptable rates of production. The applicability of pneumatic or hydraulic hammers is limited because these mechanical methods generally require numerous units of equipment operating over a much longer time period to equal the production of blasting. Consequently, reductions in noise levels

presented by this technology may be cancelled by the need to operate multiple pieces of equipment employing this technology. Furthermore, the economics of operating the multiple pieces of equipment needed to maintain production rates are often prohibitive.

If pneumatically or hydraulically driven hammers were utilized as an alternate means of breaking rock from the mine face, six to ten of these units operating ten hours per day would be required to satisfy production requirements, and the cumulative noise produced by these units over the prolonged operating period would negate the reduced vibration levels. Currently, a single hydraulic rotary-percussion drill is used to advance blast holes into bedrock, and although this type of drilling equipment is quieter than pneumatic equipment, this drill is capable of generating noise levels that warrant attenuation using a sound barrier. It should also be noted that blasting is only performed once every eight business days, with the resulting ground vibrations and air overpressure occurring over a matter of several seconds for each blast. Therefore, the cumulative noise impacts associated with the continuous operation of up to ten hydraulic or pneumatic hammers in the quarry would be expected to be greater than those produced by controlled blasting.

Another potential alternative technology analyzed is a recently patented grinding wheel attachment for hydraulic excavators that are equipped with carbide tipped teeth designed to grind and remove rock. The effectiveness of this technology on the limestone bedrock at the quarry has not yet been proven, nor was the manufacturer able to provide any data concerning noise generated by the operation of this equipment. As with the impact hammers, approximately four to six excavators equipped with these specially designed grinding wheels and operating ten hours per day would be required to satisfy current production rates. It is anticipated that the impacts associated with the noise produced by the continuous operation of these machines on a daily basis would be much greater than the momentary effects of blasting once every eight business days.

### 7.6.2 Movement of Rock

An alternative to the transport of limestone from the quarry to the processing facilities using trucks would be the use of conveyors. The use of conveyors has the potential to reduce dust and noise levels associated with the trucking of the materials within the project site. However, the trucking of material from the working face of the quarry to the processing facilities has not been identified as a problematic source of noise, and dust suppression measures for internal haul roads are considered adequate to minimize dust generation from truck traffic. Therefore, the benefits associated with conveying do not outweigh the higher costs of operating and maintaining the conveyor system required to move the shot-rock material the relatively long distances from the working face of the quarry to the processing facilities.

The analysis of known alternative technologies has indicated that no significant reduction of the impacts associated with drilling, blasting and movement of limestone can be achieved while maintaining a production rate that equals the processes in effect at the Como Park site. In fact, noise impacts may actually increase if certain alternative

technologies are utilized. Additionally, the utilization of alternative technologies may represent a substantial change from prior operations and necessitate a full SEQRA process itself.

## 8.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Implementation of the proposed action will result in the irrevocable commitment of certain natural resources. Section 5 provides a detailed analysis of natural and human resources impacts, including mitigation measures available to eliminate or reduce them. Those resources that will be consumed, converted or otherwise made unavailable for future use are listed and discussed below.

- The limestone that comprises the isthmus will be converted to aggregate and asphalt products. As such, the raw limestone will no longer be available in its current state nor be part of the local geology and topography. The aggregate and asphalt products manufactured as a result of isthmus-related quarrying, however initially applied or installed, could be reused or recycled in the future.
- The proposed action will also result in the loss of approximately 40 acres of potential wildlife habitat, although as discussed in Section 5, the habitat is not considered ecologically significant. The reclamation plan calls for the creation of a large lake that would cover the current isthmus area. With that, the terrestrial habitat on the isthmus will be replaced by an aquatic habitat.
- The proposed action will likewise result in the loss of any other future alternative use of the isthmus.
- The extension of the life of the mine will extend the operational demands of the quarry, including fossil fuels and other natural resources associated with truck and equipment manufacturing. The fossil fuel demands are somewhat offset by the extension of the time during which the quarry will provide a local source of stone products, thereby maintaining current transport distances.

The proposed action does induce the irreversible and irretrievable commitment of the above-listed resources. However, the demand for the stone and other products of the project site is independent of the proposed action. The demand will be satisfied either by the extension of the life of existing mines or the permitting of new (i.e., greenfield) mines. Reasonably, it can be expected that the environmental impacts associated with the continued mining of an existing quarry are less than those associated with a new one.

## 9.0 CUMULATIVE IMPACTS

As part of the due diligence for this DEIS, A written FOIL request was submitted to the Town of Cheektowaga Building Inspection Department for information about projects within the vicinity of the project site. The FOIL request, dated January 18, 2006, and the map prepared by the town in response to the request are provided in Appendix JJ. Projects identified by the Town pose no conflict with the continued operation of the quarry, and are the following:

- Rezoning request from (M-1) Light Manufacturing to (M-2) General Manufacturing;
- Change in use, from warehouse to food processing with accessory restaurant; and
- Special permit request to increase a cell tower on BCS's property.

The first two projects are directly north of the quarry on Broadway and are separated from the quarry by the railroad corridor.

On-line editions of the NYSDEC Environmental Notice Bulletin since January 4, 2006 were also reviewed to determine if any applications for new mines or expansions to existing facilities within a one-mile radius of the project site were in process or recently approved. No such applications or notices of related actions were entered in the ENB for the period reviewed. Therefore, cumulative impacts from mining activities at other sites in the area are not a concern.

The proposed action consists of the continued operation of an existing quarry via the mining of additional bedrock within the current limits of the quarry. It involves the continuation of a long-established, on-going operation, and will not result in any consequential impacts beyond those associated with the current quarry operation. Furthermore, no growth-inducing impacts are associated with the proposed action, as it is a single, independent action that does not rely on or create other actions.

6 NYCRR Part 617.9(b)(5)(iii)(a) requires that cumulative impacts be evaluated where they are applicable and potentially significant. Such an evaluation is accomplished by assessing the collective impacts of a proposed action and other actions that are approved or reasonably foreseeable within the same area. Based upon the nature of the proposed action and associated impacts, as described in the previous paragraph, an evaluation of cumulative impacts is not appropriate in this case.

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