The Dalton site has one owner willing to allow development of the property. The Carroll West site had one owner willing to allow development of the site as of several years ago. An additional parcel or easement is needed to establish access to Route 3. The Carroll East site has two owners, one of whom had been known to be willing to consider development of the property, and the second owner has not been approached. The two separately owned parcels are needed to create a viable landfill footprint. The existing access road to the Shelburne site crosses through three parcels not owned by the landfill site owner who has recently listed the property for sale. The three parcels are owned by three separate entities. It is not known as to whether all three owners would be willing to sell or provide access easements, although a more environmentally intrusive road alignment avoiding these three parcels is possible.

Table 2 Part 2 results indicate the Dalton site ranks first overall with the best access to a state highway, no downgradient sensitive receptors, most compatibility with surrounding land use, and a supporting landowner.

4.4.3 Overall Scoring

The Dalton site was first among the four candidate sites in the Part 1 and Part 2 scoring system by a wide margin and is the clear choice among the four candidate sites.

5.0 ON-SITE MINIMIZATION OF SELECTED ALTERNATIVE

The Granite State Landfill (GSL) footprint revisions evolved over a five-year span with the goal to minimize wetland disturbance while maintaining project justification. The project was a collaboration of permit team guidance and regulatory input and is detailed by a five-step process as described below. The seven concepts and sub-concepts are shown on Figures 19 through 30. Detailed design drawings of the landfill and required infrastructure area along with stormwater features are depicted on the 50-sheet design drawing plan set to be submitted with the full application.

Overall minimization of the selected final footprint also included detailed design consideration of the infrastructure area and upgrading the access road and entrance on Route 116. The upgrades to the access road include substantial improvement to environmental considerations including wildlife habitat protection and functionality along with long term drainage considerations from a highway design perspective. These improvements to the site access road (Douglas Drive) and the entrance on Route 116 are shown on Sheets 22 through 36. Minimization of indirect impacts involved balancing pre- and post-development watershed conditions downslope of the landfill, infrastructure area, and access road as presented in the separate Alteration of Terrain permit application submitted near concurrently with this Wetland application.

5.1 Landfill Expansion Footprint

Concept 1 – Desk Study

The siting criteria were first applied to the GSL site during the desk study phase of work. The initial potentially viable landfill footprint is shown on Figure 19 as Concept 1. The footprint boundary shows the limits of excavation and filling associated with the lined landfill area and the perimeter berm and

access road. Stormwater ponds needed to manage stormwater runoff, replenish groundwater, and treat runoff water quality are shown separately outside of the footprint limits. It was assumed during this preliminary period that the infrastructure area could be constructed, and the access road upgraded without substantial additional wetland filling or disturbance. The Concept 1 footprint would not result in filling or permanent disturbance of NWI wetlands or perennial streams and surface water. The footprint complies with all NHDES siting criteria other than separation to field-delineated wetlands.

The southern limits of Concept 1 were established to provide a 200-foot setback to an NWI designated perennial stream. A similar setback to NWI surface water established the western limits of Concept 1. The northwestern corner of Concept 1 was set back 200 feet from an intermittent stream and a nearby commercial sand and gravel mining operation located beyond the stream. Steep slopes limited the landfill footprint to the north, as well as a 100-foot setback to the property line shared with the managed forest area of Forest Lake State Park. The eastern limits of the Concept 1 footprint were set back 100 feet from a ridgeline to situate the landfill within the Alder Brook watershed and outside of the Forest Lake watershed.

Using the subsequently completed field-delineated wetland survey as a base plan layer, the landfill footprint of Concept 1 filled and permanently disturbed 40 acres of wetland, with required stormwater ponds resulting in an additional 3 acres of wetland filling or disturbance (not allowed by rules). Concept 1 has a landfill footprint of 238 acres and a capacity of 67 million cubic yards (MCY).

Concept 2 – Initial Site Visit

During initial site reconnaissance it became apparent that the extent of perennial surface water and significant wetlands extended into the east-central portion of the Concept 1 footprint. As shown on Figure 20, the footprint limits were adjusted to avoid those areas resulting in a decline in footprint area to 219 acres. Landfill capacity declined to 44 MCY and footprint wetland filling and disturbance declined to 32 acres applying the subsequently completed field delineated wetland limits. The stormwater pond wetland filling and disturbance declined to about 0.2 acres or less.

Concept 3 – Screening Level Design

Subsequent site reconnaissance confirmed the likelihood that the perennial stream and associated wetland complex in the east-central portion of the footprint extended east to the existing site road used to access the sand and gravel mining operation in the northern portion of the site. The landfill footprint was reduced to avoid filling or disturbance in this area. Observations also indicated the existence of bogs/beaver ponds along the eastern portion of the southern landfill footprint limits. The landfill footprint limits were moved to the north in this area to provide the required NHDES setbacks to surface water. As shown on Figure 21, the landfill footprint area declined to 181 acres, wetland filling and disturbance declined to 19 acres applying the subsequently completed field delineated wetland limits, the stormwater pond wetland filling and disturbance was unchanged at about 0.2 acres or less. Landfill capacity declined to 32 MCY.

Concept 4 – Preliminary Wetland Permit Level Design

The landfill footprint was developed to a Wetland Permit Level Design including grading of earthwork, and design of perimeter berms, swales, roadways and stormwater ponds and pond access roads as described above. The field delineated wetland survey was incorporated into existing conditions during these design efforts. The landfill footprint was reduced from Concept 3 to limit wetland filling and disturbance and to incorporate other features favorable to direct and indirect impacts:

- The landfill footprint was moved about 100 feet downslope and west from the ridgeline parallel to the eastern landfill limits relative to Concept 3. This change had the following results:
  - Filling wetlands near the northeast corner of the landfill is avoided.
  - The limit of waste is now 350 to 375 feet from the ridgeline, an additional 100 feet of separation from Concept 3, and about 190 feet from the Forest Lake Park boundary to the north.
  - The landfill is situated farther from the Forest Lake watershed.
  - The landfill is less visible, particularly from the eastern shore of Forest Lake.
- The southeast boundary of the landfill footprint was moved to the north to avoid a large wetland complex. This modification also reduces the landfill visibility from the southeast shore of Forest Lake.
- Stormwater ponds were added to the lowest southwest corner of the landfill to reduce indirect impacts to downslope wetlands and surface water. This change reduced the lined landfill area and extended the distance from the limit of waste to surface water and wetlands beyond what is required by NHDES regulation in this key location where leachate drains and be collected within the double-lined landfill.
- The limit of waste, or lined area of the landfill was set back at least 200 feet upgradient and 100 feet downgradient from field-delineated wetlands to conform with NHDES siting criteria. This change reduced the landfill footprint from 181 acres to 173 acres and provided a larger buffer between the waste and the wetlands. The lined footprint within the overall landfill footprint was 137 acres.
- The wetland setback criteria were modified to be based on topography rather than the groundwater phreatic surface. This change reduced the lined landfill area from 137 acres to 135 acres and provided a larger buffer between the waste and the wetlands.
- A round of minimization took place during the regulatory feedback process. Low retaining walls were added at the toe of slope of perimeter berms in places, a few stormwater ponds were moved out of wetlands, and low retaining walls were added to pond access roads to reduce wetland filling.

As shown on Figure 22, the overall landfill footprint was reduced to 173 acres, wetland taking declined to 18 acres, wetland filling associated with stormwater ponds and pond access roads remained at about 0.2 acres or less and landfill capacity declined to 23 MCY.

Concept 5 – Wetland Permit Level Design

NHDES, and U.S. Army Corps of Engineers (USACE) regulatory feedback on Concept 4 required re-evaluation of the project scope and design from a three-phase project to a single development. The NHDES-WMD solid waste permit is by law limited to a 20-year period. In this instance that period would include 2 years

of construction and 18 years of operation at an annual disposal rate of 600,000 CY per year for a total capacity of 10.8 MCY. The previous Concept 4 plan included a three-phase landfill development to be constructed and built over a 38-year period. The USACE and the USEPA communicated in permit meetings that the master plan buildout of three phases would need to be understood at the time of application. However, the NHDES Wetlands Bureau needed to limit the permitting scope to a single development. Therefore, the project team could not reconcile the project schedules and scopes of the various permitting processes.

With the new development, indirect impact to Alder Brook would be decreased, as detailed below. Alder Brook contains cold water brook trout habitat which would require that the project limit temperature increases among other runoff and groundwater discharge related impacts. Increased setback distances to the brook and abutting high value wetlands would mitigate warmer runoff temperature impacts and provide for additional treatment of overland flow from the landfill area.

Concepts 5.1 through 5.3 are alternatives for an 18-year duration project that better aligns the required permit applications and durations and incorporates the following design changes to reduce potential impacts to Alder Brook.

- The lined landfill footprint is reduced to 70 acres from 135 acres.
- The distance from the lined landfill footprint to Alder Brook increases substantially for 2 of the 3 alternatives.
- The total project area of disturbance, including landfill, infrastructure, stormwater, and roadway improvements is reduced to about 150 acres from 270 acres.
- The landfill operating duration is reduced to 18 years from 38 years.
- Wetland filling is reduced to 10 acres from 18 acres for two of the alternatives.
- Vernal pool filling is reduced to varying degrees for the alternatives evaluated.
- Stormwater pond surface area is reduced from 11 acres to 5 acres.
- Filling of intermittent streams is reduced for 2 of the 3 alternatives.
- A lined stormwater pond is added to the leachate handling portion of the infrastructure area to collect and contain any spills or breaches.

In addition:

- The maximum landfill height is lowered by 20 feet to reduce visibility.
- White liner and tarp geomembranes will be employed during construction and operations rather than conventional black materials to cool surface water runoff.
- Trees will be planted around and in ponds and adjacent to swales to shade and cool surface water.
- To the extent allowed by the rules, the ponds are designed to infiltrate runoff into the ground to aid in cooling the water.

5.2 Minimization of Selected On-Site Landfill Location

The objective of Concept 5 was to develop a single-phase project within the 3-phase Concept 4 footprint that minimizes environmental impacts. Our goal was to avoid wetland filling to the extent practicable, and limit filling of streams and vernal pools. Our evaluation considered wetland cover types and principal and

suitable wetland functions and values. We chose to avoid disturbing the high value wetlands associated with Alder Brook and its tributaries located west and south of the borrow pit access road, and to provide more separation between the landfill and Alder Brook. Three sub-concept alternatives developed for project consideration are shown as attached Concepts 5.1, 5.2, and 5.3 on Figures 23 through 25, respectively. Each concept would provide at least 10 MCY of capacity.

On-site alternative selection matrices are provided in Tables 3 and 4. The matrices cover the seven concepts and sub-concepts developed. Table 3 contains selection criteria for filling of four wetland cover types, two stream types, and vernal pools. Table 4 contains selection criteria in acreage filled for 12 principal and suitable functions and values.

Regarding Table 3, Concepts 5.2 and 5.3 have less total wetland filling than Concept 5.1. Concepts 5.2 and 5.3 fill about the same acreage of wetlands but differ in that Concept 5.2 fills more length of intermittent stream and fewer vernal pools than Concept 5.3. Regarding Table 4, again Concepts 5.2 and 5.3 fill significantly fewer total wetlands than Concept 5.1. Concept 5.2 fills a little less than Concept 5.3 of principal function/value wetland acreage, whereas Concept 5.3 fills a little less than Concept 5.2 in suitable function/value wetland acreage.

Overall, Concepts 5.2 and 5.3 have similar scoring considering the summaries provided in Tables 3 and 4. Concept 5.3 was selected as the preferred alternative when considering regulatory requirements other than wetlands. Concept 5.3 is set back 700 feet farther than Concept 5.2 from the main branch of Alder Brook. The brook has been identified as a cold water habitat trout among other species. This additional buffer provides benefits to water quality in the stream by naturally filtering landfill area runoff through overland flow and allowing runoff from the landfill to cool over an increased distance through forested areas and via a longer path of groundwater flow. Additionally, the increased buffer provided by Concept 5.3 provides longer groundwater travel times to Alder Brook and thus more time to study and remediate any releases detected in the monitoring wells located near the perimeter of the landfill.

5.3 Infrastructure Area

The infrastructure area and access road area of disturbance are shown on Figure 27. The infrastructure area includes truck scales, queueing, and staging areas; office and maintenance buildings; leachate storage, treatment and unloading facilities; a landfill gas to pipeline quality "natural gas" processing facility, and stormwater ponds. These infrastructure facilities are sited in upland areas and minimal wetlands are directly filled or disturbed by this portion of the project. Stormwater ponds are incorporated into the infrastructure site layout to control and treat runoff and to infiltrate groundwater to limit indirect impacts. In the recent design revisions, the infrastructure area has been consolidated into a smaller footprint and the distance from Alder Brook to the disturbed infrastructure area footprint increases to 1,600 feet from 650 feet.

5.4 Site Access Road (Douglas Drive)

The existing 7,000-foot-long site access road is appropriate for truck traffic associated with the current soil and rock mining operations at the site. Modifications to the grade and alignment of the road are required

to accommodate safe and efficient travel for the larger tractor trailer trucks delivering waste to the landfill. Modifications include widening the road to allow safe passing of trucks moving in opposite directions, widening turns to accommodate tractor trailer turning wheel motions, flattening certain sections for ease of travel and site lines, paving the road in current gravel sections, and thickening the pavement base section of paved areas near Route 116. The entrance to the site has been realigned into a 90 degree "T" configuration to improve turning motions.

The existing road crosses seven undersized and deteriorating culverts draining small watersheds flowing east to west. The road will be raised, and these culverts replaced with appropriately sized culverts. Wetlands border the road at these and other locations. Raising and widening the road will necessarily result in permanent and temporary wetland filling. Using conventional berm slopes the road upgrades would result in wetland filling. The design instead incorporates culvert headwalls and low retaining walls to reduce wetland filling.

Raising, widening, and paving the road would result in additional stormwater runoff. Accordingly, we are proposing to construct five stormwater ponds at selected locations along the road alignment to control runoff flow and treat runoff water quality. Stormwater management is discussed in more detail in the separate report in the Alteration of Terrain application.

The access road from the infrastructure area to the landfill is relocated 950 feet upstream from the previous design to an upgraded existing crossing. The existing pipe culvert will be replaced by an open bottomed box culvert. Details of the stream crossing are shown on Sheets 30 through 33 of the design drawings. The proposed box culvert will incorporate sufficient height and width to accommodate wildlife passage beneath the road. A second natural stream crossing near that location would be restored after it had earlier been diverted to the other channel through a man-made roadside swale. The reported perennial stream filling on Figure 27 includes filling of the man-made roadside ditch.

As shown on Figure 27, the overall access road and infrastructure area of disturbance is 36 acres, with wetland filling of 0.9 acres.

5.5 Evaluation of Other Possible On-Site Landfill Location Alternatives

We found no viable alternatives to the final permit-level design (Concept 5.3) that met project criteria for limiting overall environmental impacts and providing the required disposal capacity. Figure 30 shows four additional areas on site evaluated for the lined landfill. The rest of the site is unsuitable for a landfill as these areas contain perennial streams/ponds, significant wetland systems, ongoing commercial activities intended to be continued by the property owner and topographic constraints. We did not evaluate a contiguous part of the property located in the Town of Littleton as we preferred to site the landfill in only one municipality, and that parcel is crossed by a perennial tributary stream to the main stem of Hatch Brook.

Area A

Area A is located immediately north/northwest of the selected footprint. Although portions of Area A satisfy design criteria for the landfill (See Concept 5.2 on Figure 24), those Concept 5.2 areas would be set aside to provide a buffer between the landfill and Alder Brook. Active sand and gravel mines, and Alder Brook and additional perennial streams are located farther to the north/northwest. These

north/northwest portions of Area A include mountainside slopes that are too steep to provide a stable base grade for the landfill and financially viable disposal capacity.

Area B

Area B is located immediately west of the selected footprint. Area B also satisfies design criteria for the landfill, but it too has been set aside to provide a buffer between the landfill and Alder Brook.

Area C

Area C is located south of the Infrastructure Area and the selected footprint in a watershed that drains directly into the Ammonoosuc River rather than Alder Brook. It occupies an area on the south facing slope of a ridgeline. The potentially viable footprint is bounded by the crest of the hill to the north and west, steep slopes and the Forest Lake drainage basin divide to the northeast; wetlands, surface water and the 500-foot property line set back to the south; and setbacks to the site owner's house along with the Alder/Hatch Brook water shed boundary to the southeast. Accounting for setbacks, the landfill footprint is too small to provide the needed disposal capacity. Furthermore, the Area C landfill would be significantly more visible to many more residences on the lake than the selected alternative and would also face and be visible to the nearby abutting residential properties lining West Side Road immediately to the south. Importantly, the property owner is considering an industrial park at this location and is not in favor of pursuing a landfill footprint in Area C.

Area D

Area D contains extensive NWI designated wetlands and perennial streams including the main stem of Alder Brook.

6.0 ENVIRONMENTAL JUSTICE CONSIDERATIONS

Environmental justice is based on the principle that all people have a right to a clean and healthful environment regardless of race, nationality, income, age, education level, or language proficiency. Environmental justice is the equal protection of all people with respect to enforcement of environmental laws, regulations and policies and the equitable distribution of environmental benefits and burdens. The objectives of our environmental justice review are to evaluate whether an environmental justice qualifying population exists in the vicinity of the prospective landfill site, and to consider the presence of such a population in siting the landfill.

CMA Engineers evaluated environmental and socioeconomic data for the Dalton (GSL) site using the USEPA Environmental Justice Screening tool. The screening tool results are provided in Appendix C. The Environmental Justice Screening Tool collects data on socioeconomic indicators such as people of color, income, age, employment, education, and English- speaking proficiency; and environmental parameters associated with air quality, water quality, and waste site proximity.

Regarding the pollution levels and sources provided in Appendix C, New Hampshire has on average lower levels of air and water pollution, and fewer sources of such pollution, than the United States as a whole. The area within two miles of the GSL site in the Towns of Dalton, Whitefield, Bethlehem, and Littleton has overall lower levels of pollution and pollution sources than the state-wide values. These data indicate that

the residents in the vicinity of the GSL site do not qualify as an Environmental Justice Population as already degraded environmental conditions do not exist.

Similarly, the local GSL population does not qualify as an Environmental Justice Population considering the unemployment rate, English-speaking proficiency, or education level, as the local values are mostly more favorable than the state-wide and country-wide values. New Hampshire has a small population of People of Color, particularly outside of the major cities and towns. As a result, the relatively few People of Color in the vicinity of the GSL site do not qualify as an Environmental Justice Population as the project will not have a disproportionate impact on that population.

The socioeconomic indicators for income and age do indicate the need for further evaluation. Low income is defined by USEPA as income being lower than twice the national poverty level. The low-income population within 2 miles of the site comprises 25 percent of those residents. That value is higher than the state-wide value of 19 percent, but lower than the national value of 30 percent. The concentration of residents over the age of 64 in the vicinity of the GSL site is 27 percent, a value that is higher than the state-wide concentration of 18 percent, which in turn is higher than the national concentration of 16 percent. This older population is more likely to be retired and living on a fixed income, perhaps impacting the income levels.

Given this mixture of age and income, we evaluated real estate values as a measure of wealth other than income. Realtor.com reports the median sale price of homes in Coos and Grafton Counties to be $210,000 and $357,000, respectively, in February 2023. Using the Zillow website, median home values within 2 miles of the GSL site are shown to be worth $321,000 in January 2023. Note that Zillow estimated home values for only 76 percent of the homes known to exist in the 2-mile zone. We judge this relatively large sampling of home values to be reasonably representative of the total. The value of real estate in the vicinity of the GSL is within the upper range of the surrounding communities. A recent check indicates real estate values in the area have increased by about 9 percent since February.

We also reviewed the abutter list provided in the wetland application. Of the total 36 residential properties that abut the GSL site and the current owner's contiguous property, only 15 have mailing addresses in the Towns of Dalton, Whitefield, Bethlehem, or Littleton. The out-of-town ownership of the other 21 abutting properties suggest these properties are second homes. The out-of-town owners are not considered residents by the USEPA environmental justice screen and are excluded from the socioeconomic indicators including income. Including the out-of-town owners within the 2-mile survey zone would likely lower the reported percentage of the low-income population substantially as the second homeowners are more likely to have a higher income than the local population in this instance.

Lastly, GSL will offer a host community agreement that would include significant annual payments to the Town of Dalton, free trash pickup and disposal, and recycling service to every resident, and other financial benefits. Negotiating the proposed host community benefit agreement is the best opportunity for Dalton residents to provide input that will help shape operations at the facility. The host community agreement terms will provide direct financial benefits to residents of Dalton in terms of lower property taxes.

Considering the income, age and real estate data discussed above, as well as the financial benefits of the host community agreement, the residents in the vicinity of the GSL site do not qualify as an Environmental Justice Population because of low income.

In addition to the USEPA Environmental Justice Screening tool, the site and area was evaluated using Climate and Economic Justice Screening Tool provided by the White House Council on Environmental Quality. Census tracts are considered disadvantaged if they meet the threshold for at least one of the tool's categories of burden and corresponding economic indicator. These categories include Income, Climate Change, Energy, Health, Housing, Legacy Pollution, Transportation, Water and Wastewater, and Workforce Development.

According to the Tool, the census tract containing the project location does not meet any burden threshold. Notably, the proportion of people in households where income is less than or equal to twice the federal poverty level in the Dalton/Whitefield census tract is below this economic threshold and therefore the site and surrounding area are not considered to be disadvantaged.