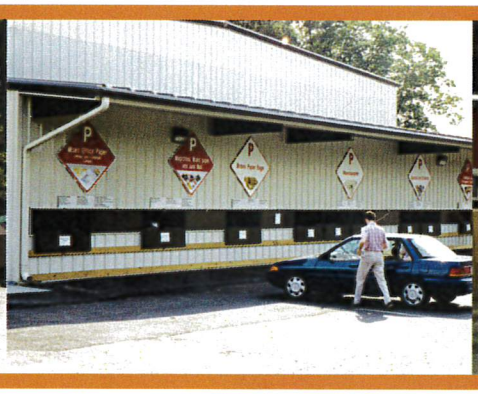
SANBORN HEAD

PROPOSAL

Solid Waste Management Facilities Study

Town of New London Department of Public Works



submitted to:

Richard Lee, Director
Town of New London
375 Main Street
New London, NH 03257

May 26, 2017

SANBORN HEAD

Mr. Richard Lee, Director
Town of New London
375 Main Street
New London, NH 03257

May 26, 2017

Re: Proposal for Solid Waste Management Facilities Study
New London, NH

Dear Mr. Lee:

In response to the Town of New London's Request for Proposals, Sanborn Head is pleased to submit our proposal for the Solid Waste Management Facilities Study. We have carefully reviewed the goals and objectives for the Study and have become well-acquainted with the operating issues at your current facilities. Our understanding of these issues centers around the meeting we had with you in late April, followed by Sanborn Head's site walk of the existing drop-off facilities. Our time spent in New London, and our subsequent review of several sources of information specific to your existing operations – including tonnages processed through the facility, existing baler performance criteria, population trends, and the NRRA 2016 Site Review Report - has provided us with an in-depth understanding of your needs, as elaborated in the Project Understanding, Project Approach, and Scope of Services sections of our Proposal.

Our Project Understanding reiterates the three primary Study objectives: 1) optimizing your existing operations; 2) identifying an optimal layout that would consolidate your existing operations to a single site; and 3) evaluating issues associated with developing a regional transfer station and recycling facility. The Project Understanding section of our proposal describes how our knowledge of the issues specific to New London have informed our approach to address, in a comprehensive manner, each of the Study's primary objectives.

Our Project Approach and proposed Scope of Services describe in detail the various options we will explore as we prepare the Study. With respect to optimizing existing operations, we will look at options aimed at accomplishing the overarching objective of improving the residents' safe and convenient use of the facility while enhancing its overall operational efficiency. Our approach for addressing the concept of consolidating all operations at a single site will be driven by feedback we obtain from the Town regarding additional materials it may wish to process, the type of handling equipment preferred, and projected space planning needs due to population growth and increased recycling rates anticipated to occur over time. Lastly, our approach for evaluating the regionalization option is based upon the input we receive from the Towns of Wilmott and Andover, the two communities identified in the RFP as those New London is interested in exploring at this time.

We trust your review of our proposal will demonstrate not only the depth to which we have informed ourselves of your existing operations and project needs, but also how we have used the proposal phase as an opportunity to begin the initial planning stages for the Facilities Study. We are excited at the prospect of teaming with the Town and are ready to meet with you to kick the project off. We hope we will have this opportunity. In the meantime, we would be pleased to discuss our proposal with you in greater detail should you have any questions or require any additional information.

Very truly yours,

SANBORN, HEAD & ASSOCIATES, INC.

Stephen E. Wright
Vice President

SW/DA/: kw

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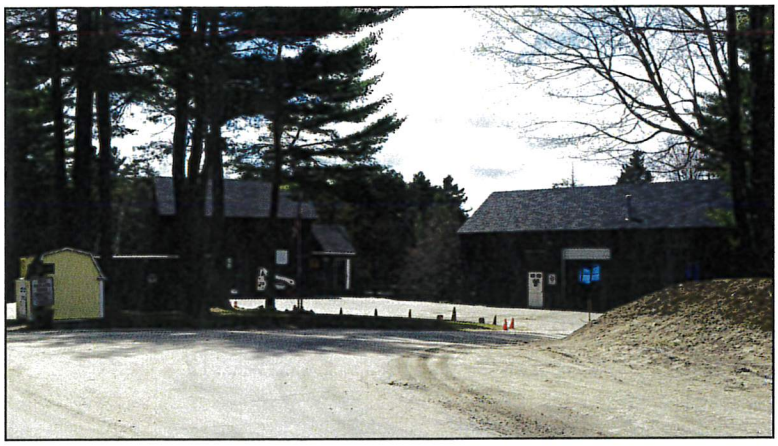
PROJECT UNDERSTANDING

Our understanding of the project requirements and general approach for the New London Solid Waste Management Facilities Study is based on careful review of the Town's needs as outlined in your Request for Proposals, our site walk of the existing facilities and discussions with operations personnel on how the transfer station and related recycling activities function, and our informative meeting with the Town's Director of Public Works to discuss issues associated with the current operations and opportunities for addressing these issues from both a near- and long-term perspective.



New London Transfer Station

Our understanding of New London's needs and objectives have been further informed by our review of existing waste and recycling tonnages provided to us by the Town, a review of performance criteria for the two vertical balers used at the transfer station, and a review of the Town's 2012 Master Plan. The Master Plan provided insight regarding population growth experienced in New London over the past 45 years and the impact this growth has had on the traffic demands experienced at the transfer station since it began operating in the 1980s. Our review of this information, combined with our understanding of your current operations and our familiarity with other transfer stations and recycling facilities in Towns like Lebanon, Lee, Pittsfield (BCEP), and Derry New Hampshire, have provided us with additional insight that will ensure that the Solid Waste Management Facilities Study not only evaluates specific options aimed at improving operations at the current transfer station site, but will also properly evaluate community growth trends and increased recycling demands that will form the basis of the New Site Planning portion of the Study.

As highlighted in your Request for Proposals, there are three primary objectives associated with the Facilities Study:

1. Optimizing the function and efficiency of the Town's current solid waste and recycling facilities;
2. Identifying an optimal facility layout that will allow all or most of the Town's current solid waste and recycling operations to be consolidated to a single location; and
3. Evaluating interest that nearby communities may have in participating in a regional transfer station and recycling facility, where the facility would serve New London's needs as well as the needs of two nearby communities.

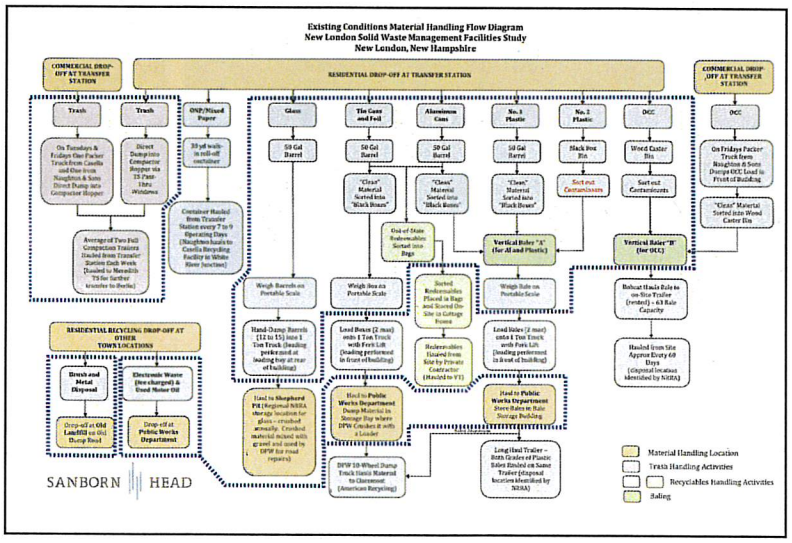
To develop a fully informed basis for addressing these objectives, it is critical to have a thorough understanding of the Town's current waste handling and recycling operations. Part of this understanding comes from reviewing the information and issues presented in the April 2016 Site Review Report prepared by the Northeast Resource Recovery

Association (NRRA). The NRRA report focused on operations conducted at the New London Transfer Station, where the Town's trash handling operations and the majority of its recycling operations are performed. In addition to a review of the transfer station layout and operations, the NRRA also visited the Town's other three sites that support your recycling operations:

- Department of Public Works on South Pleasant Street – Aluminum bale storage and tin/foil storage (transferred from the transfer station), and residential drop-off of electronic waste and used motor oil;
- Old Landfill Site located on Old Dump Road – Residential drop-off of brush and large metal items (white goods); and
- Shepherd Pit on Mountain Road – Glass consolidation (transferred from the transfer station and delivered from other communities in connection with NRRA-brokered recycling) and annual glass crushing.

With respect to operations at the transfer station, the NRRA report noted issues related to safety and operational inefficiency. Safety issues pertained to the potential for pedestrian and vehicular conflicts at the site, and operational inefficiency pertained to the limited space available to receive, sort, bale, and store recyclables. The report included options aimed at alleviating these issues, including abandoning use of the two existing vertical balers in favor of installing a small horizontal baler (allowing additional material to be baled, including mixed paper). The report also included a recommendation that the Town consider commingling and baling all grades of plastic (1 through 7), as opposed to its current practice of separating and baling No. 1 and No. 2 plastics only. These changes were proposed by NRRA with the goal of improving the efficiency of the baling process, as well as saving time currently spent separating and storing two separate grades of plastics.

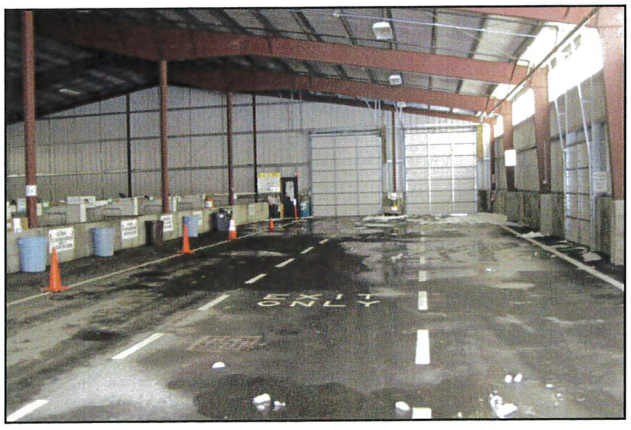
The NRRA's evaluation of the other receiving sites (DPW, Old Dump Road, and Shepherd Pit) was performed primarily to consider their potential to accommodate all of the Town's solid waste and recycling operations, recognizing that the transfer station site has limited expansion potential. The results of the preliminary siting evaluation concluded that neither the Old Dump site nor the DPW site had sufficient area to consolidate all of the Town's required waste and recycling operations, whereas the Shepherd Pit site appeared to have the requisite size required to meet this objective.



Material Handling Flow Diagram

While the NRRA report provides a useful overview of operational issues and recommendations, a more in-depth understanding of actual material handling activities at the transfer station is necessary to fully explore how best to optimize operations at the site and the other in-Town receiving sites. To this end, Sanborn Head has begun developing a material handling flow diagram that summarizes the waste and recycling drop-off and processing activities at each site in Town, where the transfer station serves as the central receiving, processing and distribution hub. The flow diagram depicts the extent of material handling performed by the DPW from the moment recyclables are dropped off at the transfer station. The flow diagram indicates that tin cans, aluminum, and plastic is handled seven to eight times in the course of processing, storing and delivering the material to out-of-town recycling markets.

Our preliminary draft of the material handling flow diagram was developed based on information we gathered from our April 28, 2017 meeting with the Director of Public Works, and information gathered from the transfer station site visit conducted later that day. Preparation of the flow diagram is central to our approach for confirming and communicating the Town's existing solid waste and recycling operations with the DPW and the Solid Waste Committee. The flow diagram will also be used to identify those portions of the Town's operations where handling improvements could be made, which in turn will allow the diagram to serve as a template for depicting proposed operational improvements.



Lee Transfer Station

PROJECT APPROACH

Our understanding of the Town's current solid waste and recycling operations, annual tonnage and revenue data, (obtained from the Town's March 2017 Annual Report), and NRRA report findings, has provided Sanborn Head with significant insight into the needs of the project and serves as the foundation of our project approach. Specifically, our approach is based upon identifying specific improvements we will evaluate as part of the Facilities Study and coordinating these potential improvements with the DPW and Solid Waste Committee at the outset of the project. To this end, we have summarized below several of the proposed options we will be prepared to explore in connection with the three main components of the Study.

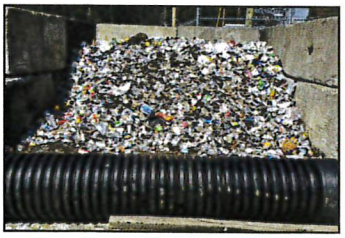
Current Site Optimization

As part of our evaluation of existing operations, Sanborn Head will evaluate a range of improvements that could be made at the transfer station, from smaller-scale operational modifications to more extensive site and building alterations. Where existing site constraints would prohibit more extensive site alterations, these constraints will be documented and serve as the basis for defining the maximum extent of upgrades that can reasonably be achieved at the site. The range of modifications we will explore will include:

Recycling Building

- Evaluating the potential space-saving advantages of baling commingled plastics (#1 through #7) with the disadvantage associated with reduced revenue when compared to separating and baling No.1 and No. 2 plastics as currently performed.
- Identifying an alternate method for storing mixed paper that would improve ease of drop-off and reduce the need for transfer station personnel to monitor and maintain the stored material.
- Increasing the on-site storage capacity for baled plastic and aluminum. These materials are currently hauled from the transfer station in a 1-ton truck, where the bales are brought to the DPW facility and stored for subsequent removal (by DPW in the case of aluminum, by private hauler in the case of plastic). Increasing on-site storage for these materials would be aimed at eliminating the need to transport bales to the DPW for storage, thereby eliminating additional handling and in-town transport of these recyclables.
- Minimizing the handling of glass within the recycling building and increasing the on-site storage capacity for this material. Based on our review of the annual tonnage of recyclable glass accepted at the transfer station and the average haul weight of this material within the 1-ton truck, Sanborn Head estimates that as many as 220 trips per year are made hauling glass from the transfer station to

1-ton Truck Load-out at Recycling Building



Steel/Tin Storage at DPW Yard

Vertical Baler

Shepherd Pit. Improvements to the storage and handling of this material would have the combined benefit of significantly reducing the number of haul trips to Shepherd Pit, as well as freeing-up storage space within the recycling building and allowing transfer station staff to focus on the processing of other recyclable materials.

- Evaluating implications associated with replacing the two vertical balers with a horizontal baler. Advantages of a horizontal baler include less handling required to feed material into the baler, increased bale densities, and the ability to bale additional material that the existing vertical balers are less efficient at handling (for example, mixed paper and tin/steel cans). Additional considerations would include evaluating space requirements needed to accommodate horizontal baling operations at the site, such as: space needed for the baler; bale handling, storage, and load-out needs, and additional space requirements needed to process mixed paper and tin, should the Town wish to include these materials in the baling operations.
- Improving material handling efficiency associated with the commercial delivery of cardboard to the facility. Currently commercial cardboard is brought to the site by Naughton and Son Recycling on Fridays via packer truck. The material is dumped on the pavement in the front of the recycling building where transfer station staff manually load the material into a caster container for subsequent loading into the vertical baler dedicated to cardboard.
- Preparing schematic site plans depicting moderate versus more extensive site modifications corresponding to the above facility optimization investigations.

Ultimately, the approach Sanborn Head will take in evaluating options for optimizing existing facility operations will be aimed at improving ease of drop-off activities for residents, improving traffic flow throughout the site, and increasing the safe and efficient handling, processing and storage of recyclable materials at the transfer station.

New Site Planning

The focus of the new site planning evaluation will be to develop an optimal conceptual layout that consolidates all of the Town's recycling and solid waste functions at a single site. The plan will integrate these functions into a cohesive layout that promotes convenient and efficient access to all drop-off nodes. The components of the conceptual layout are expected to consist of the following:

- Transfer station;
- Recycling building (for drop-off of materials that will be baled or are best dropped off and stored within the building);
- Retaining wall drop-off area (in the event certain materials would best be segregated and stored in roll-off containers – for example scrap metal);
- Miscellaneous materials storage area (at-grade storage, including containerized storage for such items as refrigerators and air conditioners, TVs and CRTs, propane tanks, fluorescent bulbs and similar items);

- Brush drop-off area; and
- Glass crushing area.

As we work with the Town to develop the consolidated facility plan, there are a number of functional considerations we will coordinate with you as we complete this task, including the following:

Derry Transfer Station & Recycling Center

- Confirming method for trash handling (hopper fed compactor with compaction trailers versus tipping floor with open top trailers).
- Confirming whether the Town would like to accept a wider range of materials at the new facility (for example, demolition debris, bulky rigid plastics, commingled #3 - #7 plastics, tires, automotive batteries, used paint, and similar items).
- Identifying existing operations that the Town may wish to expand upon (for example, "swap shop" activities).
- Confirming whether the new facility will serve as a regional location for NRRA glass drop-off and crushing operations.
- Identifying primary equipment and support facilities that the Town would like included in the conceptual plan (for example, baler and conveyor equipment, vehicle weigh scale and scale house, and office/administration space requirements) and any supplemental on-site storage needs for items such as containers, transfer trailers, and equipment.

We understand that the conceptual site plan will not be developed with a specific site in mind. Instead, the layout is intended to depict a conceptual model that can be used to gauge the size of a site needed to support the consolidated operations, as well as the general layout and dimensional requirements for each of the operating nodes. The conceptual plan will also depict proposed grading showing the relative elevation changes across the proposed development area. Based on the layout and grading concepts shown on the plan, Sanborn Head will prepare a conceptual level construction cost estimate for the new facility.

Wellesley Recycling & Disposal Facility

Evaluate Regional Opportunities

Our evaluation of regional opportunities will be performed at an exploratory level, consistent with the level of investigatory activities identified in the Town's Request for Proposals. To gauge initial interest in this concept, Sanborn Head will contact the public works directors from the Towns of Wilmot and Andover to obtain a general understanding of their solid waste and recycling operations. As part of our outreach to these communities, we will request information regarding their annual trash and recycling tonnages, request their feedback on challenges they may be facing at their existing facilities, and gauge their interest and obtain their feedback on the concept of regionalization.

Following our initial contact with the Wilmot and Andover DPW directors, Sanborn Head will request permission to visit their facilities for the purposes of observing operations. We will also evaluate administrative issues associated with regionalization including cost sharing considerations, inter-municipal agreements, location considerations, and governance. Our investigation into these issues will be supplemented by inquiries we will make to other regional facilities (for example, BCEP Pittsfield).

Once we have obtained an understanding of Wilmot's and Andover's existing operations and have identified the overarching inter-municipal administrative issues associated with regionalization, we will then contact the Town Administrators of both communities to gauge their interest in regionalization. Our discussions with the Town Administrators will focus on issues they may feel would need to be addressed to make regionalization a viable consideration for their respective communities.

BCEP Transfer Station, Pittsfield

SCOPE OF SERVICES

Our knowledge of the range of issues applicable to New London, combined with our extensive experience on similar projects, provides us with the insight to prepare a well-conceived, comprehensive Solid Waste Management Facilities Study that meets the objectives outlined in your Request for Proposals. Based upon our understanding of the project needs and our proposed approach for meeting those needs, we have prepared a detailed Scope of Services for the Facilities Study consisting of the following five tasks:

Task 1 – Project Familiarization

Our familiarity with the needs on this project began in December of 2016 when Sanborn Head provided the Solid Waste Committee with our thoughts on how to structure a Facilities Study scope of services to address the range of issues the Town is interested in exploring. With that in mind, we began the project familiarization phase several months ago and have further advanced that effort as part of our proposal preparation effort. Specifically, we have already visited the four sites in Town where solid waste and recycling activities are performed; we have reviewed the NRRA's Site Review Report; and we have interviewed the DPW Director and transfer station personnel to inform ourselves of the specific issues, opportunities, and operating practices used to manage your trash and recycling waste streams — particularly in connection with operations at the existing transfer station site. In addition to these activities, we have reviewed New London's 2012 Master Plan to target population growth trends; reviewed the Town's annual waste and recycling tonnages and revenue generation figures from 2013 through 2016; and prepared a preliminary material handling flow diagram that will serve as a centerpiece for documenting current operations and opportunities for increased operational efficiency and safety.

Lebanon Transfer Station

Our scope of services for the Project Familiarization task is based on building off of the information we have already gathered and sharing this information jointly with the DPW Director and Solid Waste Committee during a project kick-off meeting. The meeting will serve as a forum for you to provide us with feedback on what we have learned so far, how we intend to use this information in developing the Study, and to discuss general work activities and schedule. The kick-off meeting and subsequent Task 1 work activities are outlined below:

A. Attend a joint project kick-off meeting with the DPW Director and Solid Waste Committee to present information Sanborn Head has compiled to date, including the preliminary material handling flow diagram, trash and recycling tonnages, operational issues, and information presented in the NRRA Report. During the meeting, initial concepts for improving operations at the existing transfer station will also be discussed and refined based upon the Town's input.

B. As a supplement to our review of the NRRA Site Review Report, Sanborn Head will contact Mike Durfor of the NRRA to discuss the findings in the report and confirm the basis of some of their recommendations (for example, implications of expanded plastics recycling). We will also request a copy of pictures and the video recorded by NRRA of transfer station operations (the pictures and video are referenced in the report but not included with the document). This information will provide additional insight into traffic conditions prior to performing our follow-up visit at the transfer station.

C. Complete a follow-up visit to the four sites currently used by the Town for solid waste and recycling. The transfer station site visit will be performed on a peak operating day of the week with the express intent of observing residential vehicle queuing, pedestrian and vehicle conflicts, potential interferences to residential drop-off activities, typical times required to complete drop-off activities, and activities that place the greatest demand on transfer station staff and whether this hinders residential drop-off activities.

Task 2 – Current Site Optimization

Based upon our understanding of current operating issues, which will be further advanced and refined under Task 1, Sanborn Head will identify options for optimizing the layout and operations at the transfer station. These options will be developed around the host of considerations identified in our Project Approach for this task. Specifically, the Scope of Services for Task 2 will include the following activities:

A. Prepare schematic layout drawings for the four sites in Town, with particular attention directed to the existing transfer station. In this regard, Sanborn Head will confirm key building dimensions and site features (such as retaining walls) for the purposes of depicting this information on the schematic site plan for the transfer station. This confirmatory work will be performed while we are on-site performing the Task 1 transfer station operational observations.

B. Prepare a summary memorandum of traffic issues, general user convenience and other observations made during the transfer station site visit.

C. Review and interpret annual trash and recycling data provided by the Town from 2013 through 2016. This information, in combination with population data obtained from the Town's 2012 Master Plan, will be used to calculate a current per-capita waste (including recyclables) generation rate for the Town. The generation rate will then be used to estimate maximum percentages of recyclables that could be removed from the waste stream using EPA and other industry reference data. This information will provide a basis for estimating increased quantities of recyclables that would need to be handled at the existing transfer station if the recycling rate was to increase above current levels, which will support the evaluation of possible equipment modifications, including installation of a horizontal baler at the site.

D. Prepare one schematic site plan depicting moderate site alterations and one schematic site plan depicting more extensive site and possibly building modifications. Where existing site constraints would appear to prohibit specific site alterations, these constraints will be documented and serve as the basis for defining the maximum extent of upgrades that can reasonably be achieved at the site.

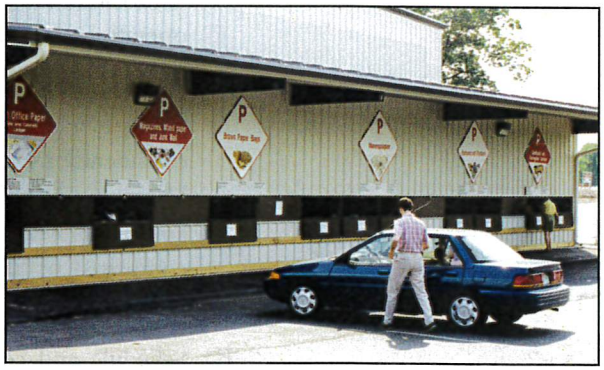
E. The two site plans will be submitted to the Town for review. Based upon input received, a conceptual construction cost estimate will be prepared for the alternative preferred by the Town.

Task 3 – New Site Planning

As described in our Project Approach, there are a number of programming elements Sanborn Head will coordinate and confirm with the Town as we develop the conceptual plan for consolidating all Town solid waste and recycling activities at a single location. The following Scope of Services reiterates the activities highlighted in the Project Approach and expands upon them as appropriate:

A. During the project kick-off meeting performed under Task 1, Sanborn Head will discuss with the Town the features it would like to incorporate into the centralized solid waste and recycling facility. This will include: confirming the method for trash handling; identifying additional materials that the Town would like to accept at the facility; confirming whether the site will serve as a regional location for NRRA glass drop-off and crushing operations; and identifying the primary handling equipment that will be included in the conceptual plan.

B. Once the programming elements of the consolidated facility have been confirmed with the Town, Sanborn Head will prepare a conceptual layout plan depicting all drop-off and processing nodes, including buildings, parking areas, roadways, and vehicle traffic patterns. The conceptual sizing for the recycling building will be based upon current recycling quantities as estimated in Task 2 and increased to account for population growth over the next 30 years (reflecting the planned operating life for the a new facility). The conceptual layout plan will also depict proposed grading showing the relative elevation changes across the proposed development area.



Wellesley Recycling Facility

C. Sanborn Head will attend a joint meeting with the DPW Director and Solid Waste Committee to present a draft conceptual layout plan for the consolidated facility. The draft plan will depict the overall area needed to accommodate all facility operations, and individual areas that make up major portions of the facility (for example, the brush drop-off area and glass processing area).

D. Upon the Town's approval of the draft layout plan, the plan will be finalized. Based on the layout and grading concepts shown on the final plan, Sanborn Head will prepare a conceptual level construction cost estimate for the new facility.

Task 4 – Evaluate Regional Opportunities

In accordance with the Town's Request for Proposals, Sanborn Head's investigation into regionalization opportunities will focus on the interest that may exist in the nearby towns of Wilmot and Andover. It is also our understanding that the regionalization concept is based on the facility being located in New London, with residents from Wilmot and Andover driving to the facility to drop off their waste and recyclables. This concept of having the facility located in New London will be confirmed with the DPW Director and the Solid Waste Committee during the project kick-off meeting (Task 1). Specific activities performed under the Regionalization Task are defined below:

A. Sanborn Head will contact the public works directors from the Towns of Wilmot and Andover to obtain a general understanding of their current solid waste and recycling operations. As part of our outreach to these communities, we will request information regarding their current annual trash and recycling tonnages, request their feedback on challenges they may be facing at their existing facilities, and gauge their interest and obtain their feedback on the concept of regionalization.

B. Our discussions with the public works directors will include an inquiry regarding traffic demands at their respective facilities and how these may translate to regional traffic that would visit the proposed facility. We will also identify those materials that each community may wish to continue to manage locally (for example, brush and scrap metal).

C. Following our initial coordination activities, Sanborn Head will request permission from each Town to visit their respective transfer stations for the purposes of observing operations at each site. General observations will be noted and used to supplement our evaluation of the regional alternative.

D. Evaluate administrative issues associated with regionalization, including cost sharing considerations, inter-municipal agreements, location considerations, and governance. These issues will largely be informed by Sanborn Head's review of documents associated with the organizational structure of the BCEP Solid Waste District, comprised of the Town's of Barnstead, Chichester, Epsom, and Pittsfield, New Hampshire.

E. Schedule and conduct interviews with the Town Administrators of Wilmot and Andover to gauge their interest in regionalization. Our discussions with the Town Administrators will focus on issues they may feel would need to be addressed to make regionalization a viable consideration for their respective communities.

F. Following the interviews with the Town Administrators, Sanborn Head will prepare a memorandum summarizing the findings from the regional evaluation and submit the document to the DPW Director and Solid Waste Committee for review. The information summarized in the memorandum will be incorporated into the Facilities Study final report.

Task 5 – Prepare Final Report

A. Based upon the work completed under Tasks 1 through 4, Sanborn Head will prepare the Solid Waste Management Facilities Final Report. The Report will be divided into four sections: Summary of Existing Operations; Improvement Options for Existing Transfer Station; Conceptual Plan for Consolidated Operations; and Regional Facility Considerations.

B. A draft of the report will be submitted to the Town for review and comment. Based upon the Town's input on the draft, the final Solid Waste Management Facilities Report will be prepared.

KEY PERSONNEL

Because this project requires expertise in solid waste planning and management, staffing will be limited to a few key individuals led by a project manager with extensive planning and design experience who will be actively involved in all phases of the Study.

Stephen Wright - Project Manager/Lead Solid Waste Specialist

Steve has nearly 30 years of solid waste planning, permitting, design and construction expertise, and has worked on a wide range of solid waste assignments, including transfer stations, material recovery/recycling facilities, and landfills. Steve's extensive experience in solid waste management and planning spans the entirety of his career, during which time he has worked on numerous municipal solid waste management studies and developed solid waste and recycling materials handling programs for colleges and universities located throughout the northeast.

Steve has been providing technical and regulatory compliance support in connection with B-P's operation of their **Hudson (MA) Transfer Station** since 2001. Although his services started while with his previous employer, this project has since transitioned to Sanborn Head as a result of Steve's level of service and trust established with B-P trucking. With respect to the Hudson Transfer Station, Steve has designed upgrades that have improved access and use of the facility by separating residential drop-off operations from commercial operations resulting in more efficient waste handling, reduced vehicle conflicts, and improved public safety. He has also prepared recycling processing expansion plans for the transfer station that would add a materials recovery facility (MRF) adjacent to the existing transfer station.

Most recently, Steve has been working with B-P to identify a preferred site for the construction of a combined MSW/C&D transfer station and MRF. As part of this effort, he has prepared conceptual layout plans comparing development opportunities and challenges at multiple sites and the comparative cost implications of each.

Steve has also served at the Project Manager and lead solid waste engineer on the planning and conceptual design for the improvements to the **Town of Derry Transfer Station and Recycling Center**. Derry's objective was to implement wholesale improvements to its existing operations, where a consolidated solid waste transfer station and recycling building would serve as the hub of the Town's material handling operations. Steve led the planning and conceptual design effort, which included a traffic evaluation, solid waste and recycling data review and projections, facility sizing, baler equipment evaluation, and preparation of several alternative conceptual layout plans. The results of the planning and conceptual design effort were presented in a comprehensive feasibility study for the facility, which led to the construction of the new 22,000 s.f. transfer station and recycling center in 2015.

Ronald St. Michel - Solid Waste Specialist

Ron and Steve have worked together on multiple solid waste projects, including the planning and concept design for the recent improvements to the Derry Transfer Station and Recycling Center. Ron has over 20 years of solid waste experience, including several transfer station planning and design projects. Ron has also been directly involved in the permitting, design and construction of transfer stations and recycling centers in Laconia, NH, and Weston, Bolton, and Provincetown, MA. Ron will support Steve on vetting concepts related to improvements for New London's existing transfer station, as well as new site planning concepts associated with a consolidated facility.

For the Derry Transfer Station project, with a community population of approximately 35,000, the primary goals of the feasibility study was to: (1) increase traffic throughput capacity to reduce vehicle queuing and to improve user safety; (2) improve recycling capacity; (3) establish a site layout that is sensitive to the number of staff available to observe operations; and (4) increase facility flexibility. The study included a traffic evaluation, solid waste and recycling tonnage projections, facility sizing, and development of multiple layout concepts. Layout options evaluated included both centralized and dispersed service nodes.

Support Personnel - Civil / Site Planning

Civil/site planning and conceptual layout activities will be supported by **Derek Long** and **Jena Shaw**. Both Derek and Jena are civil engineers working on solid waste design and regulatory compliance projects for landfill expansions, transfer stations, and residential drop-off facilities. Derek and Jena will support Steve when visiting the New London Transfer Station and other sites for the purposes of observing and documenting existing conditions and preparing schematic layout drawings of the existing operations.

Resumes for Key Personnel are provided in Appendix A.

PROFESSIONAL QUALIFICATIONS

Sanborn Head is a proven leader in the field of solid waste management, serving clients throughout New England for 25 years on projects ranging from feasibility studies to the design and construction of new waste handling and disposal facilities. Our staff of engineers and scientists are highly skilled in all facets of solid waste management, having extensive experience in solid waste planning, design, and permitting for state-of-the-art landfills and landfill expansions, and specialized expertise in the planning and design of solid waste transfer stations and recycling facilities.

With our offices in New Hampshire, Massachusetts, and Vermont, our core geographic service area is central and northern New England, where we have had long-standing relationships with the majority of our municipal and private clients. We believe the reason for our success is due to our dedication to provide the highest level of service to meet our clients' needs and do so collaboratively regardless of the size or scope of the project.

The projects we have highlighted below speak to our experience working on a assignments requiring similar skills as those called for in your Request for Proposals. We trust you will find that these projects, together with our project team, demonstrate the level of expertise Sanborn Head will bring to bear on your behalf as we assist New London in evaluating opportunities for improving your solid waste and recycling operations.

Transfer Station & Materials Recovery Facility - Hudson, MA

B-P Trucking, Inc.
Stephen DePaolo
Vice President
55 Nickerson Road
Ashland, MA 01721
P: 508-231-1000
E: stephen.depaolo@bptrucking.com

COST
$120,000

Sanborn Head provides solid waste engineering and regulatory compliance support to B-P Trucking, a private waste hauling company serving the metro-Boston area. Services include the design of facility upgrades at their 350 ton per day solid waste and C&D transfer station, located in Hudson, Massachusetts. These upgrades were focused on separating residential drop-off operations from commercial operations, resulting in more efficient waste handling, reduced vehicle conflicts, and improved public safety at the site.

In addition to the drop-off related upgrades, expansion plans have also been prepared that would add a materials recovery facility (MRF) adjacent to the existing transfer station. As part of the MRF planning and permitting effort, recycling quantities were evaluated and future quantities and types of both commingled and source separated recyclables were estimated. This information was used to identify building layout requirements and equipment processing needs, including baling equipment, compactors, conveyors, and sorting systems.

Most recently, Sanborn Head has been working with B-P to identify a preferred site for the construction of a combined MSW/C&D transfer station and MRF. As part of this effort, conceptual layout plans have been prepared for various sites of interest, where Sanborn Head has identified the cost-benefit implications, as well as regulatory siting considerations associated with each potential site.

Laconia Transfer Station - Laconia, NH

Waste Management of New Hampshire and the City of Laconia recognized the need to redevelop the existing, outdated transfer station owned by the City of Laconia and operated by Waste Management. Together, they turned to Sanborn Head to provide design, permitting, and construction phase services to bring the redevelopment project from concept to reality.

Sanborn Head evaluated alternative layouts aimed at improving and segregating residential drop-off activities from commercial activities, where as much as 70 percent of the waste brought to the transfer station is delivered by commercial haulers. Concepts also revolved around preserving existing drop-off nodes as required to maintain operation of the facility during construction.

Once the concept design was finalized, Sanborn Head led the multi-disciplinary effort for the new facility. In that role, we served as liaison to the client for all design development activities, led the civil/site design effort, and spearheaded the building services coordination activities with our design team, who we retained at the outset of the preliminary design. The building services team members included the structural engineering firm JSN Associates (JSN) of Portsmouth, New Hampshire and the mechanical, electrical and plumbing firm Rist-Frost-Shumway (RFS) of Laconia, New Hampshire.

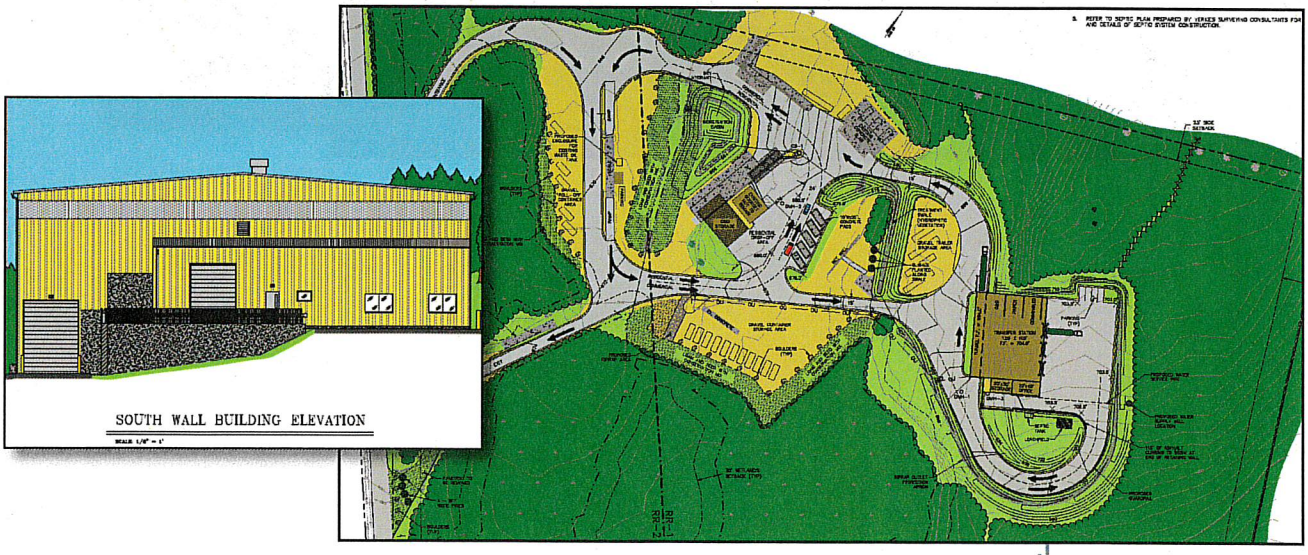
Sanborn Head, prepared the civil/site design for the facility, including leading the programming effort for all aspects of the solid waste and recycling drop-off and processing areas. In this capacity, we prepared layout, grading and drainage plans, served as project integrator and lead discipline coordinator for the transfer station building elements, and led the local and state permitting effort for the project. Permitting at the local level included Site Plan Review, on-site subsurface sewage disposal, and new curb cuts for the relocated exit road. Permitting at the state level included filing for and obtaining an Alteration of Terrain permit and a Type II Transfer Station Permit Modification from the New Hampshire Department of Environmental Services. Our design services transitioned into bidding and construction phase support, where we assisted with the bidding and award of the project, and provided construction administration services throughout the course of construction.

City of Laconia Public Works Transfer Station

Wes Anderson
Public Works Director
27 Bisson Avenue Laconia, NH 03246
P: 603-528-6379

COST

$220,000



Fort Ann Transfer Station - Fort Ann, NY

County Waste Recycling Services, Inc.

Kurt Shaner, P.E., Eastern Region Engineering Manager
265 Brookview Centre Way, Ste. 200,
Knoxville, KY 37919
P: 901-351-1439
E: kurts@wasteconnections.com

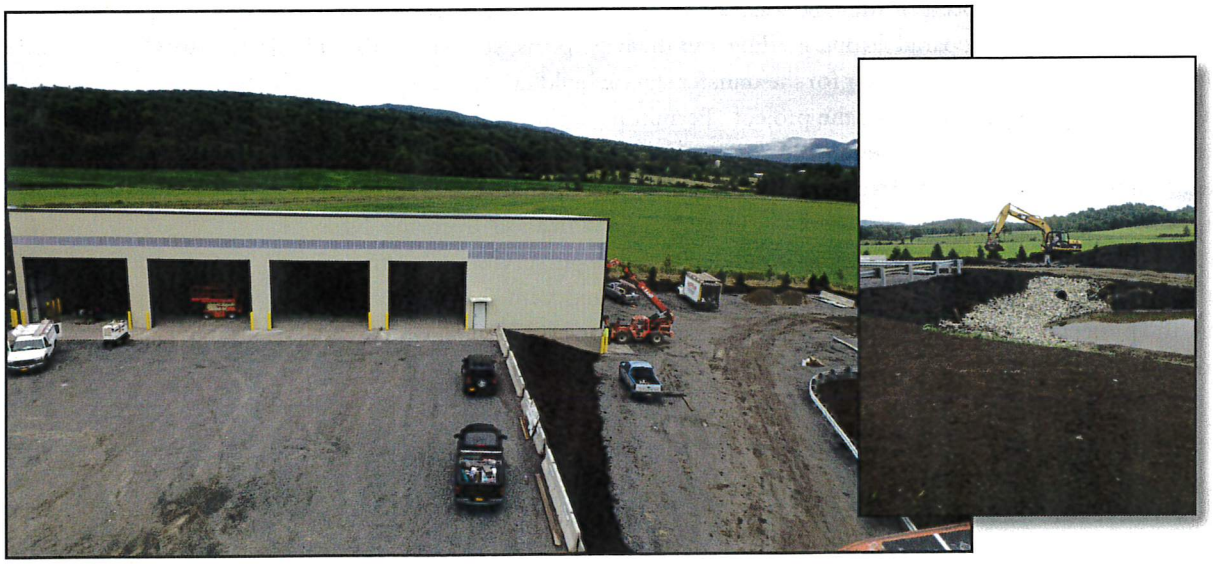
COST

$110,000

Sanborn Head assisted Waste Connections, Inc. with the expansion of the Fort Ann Transfer Station located in upstate New York. The Sanborn Head team developed the conceptual design and construction documents for the improvement/expansion of the existing transfer station. The facility was expanded from a 95 ton per day (tpd) construction and demolition debris processing center to a 500 tpd municipal solid waste transfer station that accepts construction and demolition debris and recyclable materials.

Upgrades to the facility included: replacing the existing open-air transfer station with a structure that now encloses the waste handling operations; providing area for the safe movement of on-site traffic; improving the on-site management of stormwater; providing a visual barrier on the north, east, and south sides of the facility; and paving the existing gravel entrance road between the transfer station to the state highway. As part of these upgrades, the design incorporated green infrastructure and onsite treatment of stormwater.

In addition to our role as design engineer, Sanborn Head also assisted in obtaining approvals from the local planning board and the New York State Department of Environmental Conservation (NYSDEC). Our services continued into the construction phase, where we provided on-site construction observation and construction administration support to the owner.



Southbridge Sanitary Landfill, Facilities Area Development - Southbridge, MA

Sanborn Head has provided integrated design, permitting and construction support to Casella Waste Services in connection with their phased expansion of the Southbridge Sanitary Landfill in Southbridge, Massachusetts. The landfill, the largest in Massachusetts, has an extensive infrastructure support system, part of which is the Facilities Area, consisting of existing weigh scale operations and a residential drop-off area. As part of the ongoing landfill expansion design work we are performing for Casella, Sanborn Head has provided civil and solid waste engineering design services to redevelop the Facilities Area to improve the weigh scale and residential drop-off operations and relocate other landfill support functions to this centralized location.

The proposed redevelopment consists of the redesign of traffic flow to and from the existing scale facility and the relocation the existing residential drop-off to create a separate area for residential waste and recycling disposal away from general landfill traffic. The design includes the construction of a 430,000 gallon leachate storage tank and load-out structure, landfill gas flares, and landfill-gas-to-energy engines and all appurtenant infrastructure, including water, sewer, leachate, landfill gas and stormwater utilities. A vehicle maintenance building and attached administration space is also included as part of the redevelopment of the Facilities Area.

Casella Waste Services
Toni King
Region Engineer
358 Emerson Mill Road
Hampden, ME 04444
P: 207-286-1668 x402
E: toni.king@casella.com

COST

$390,000

Residential Drop-Off Facility, TREE - Rochester, NH

Waste Management of New Hampshire, Inc.

Steven Poggi, Director of Disposal Operations
30 Rochester Neck Road, PO Box 7065, Rochester, NH 03839
P: 603-929-5413
E: spoggi@wm.com

COST

$75,000

The Residential Drop-Off Facility at TREE provides a convenient location for the residents of Rochester, New Hampshire to bring their recyclables and household waste. Sanborn Head developed alternative layouts for re-locating the drop-off facility. The original location was within the footprint of a significant landfill expansion area. After review of the alternatives, which considered site access, vehicle queuing, and wetland impacts, Sanborn Head completed the design and prepared state and local permit applications to accomplish the desired relocation.

To develop the new drop-off facility, Sanborn Head prepared layout and grading plans and designed retaining walls to achieve the required grade separations to support the various drop-off activities. The design included construction of canopies over two container areas; construction of a 40-foot by 45-foot roof structure above the construction and demolition debris area; drainage infrastructure; and other ancillary site work including provisions for electrical service and installation of a security system.

BUDGET

The budget estimate for each task is itemized below:

Budget Estimate		
TASK 1:	Project Familiarization	$2,900
TASK 2:	Current Site Optimization	$6,800
TASK 3:	New Site Planning	$4,600
TASK 4:	Regional Opportunities	$2,000
TASK 5:	Report Preparation	$5,600
	TOTAL	**$21,900**

TASK SCHEDULE

Based upon Sanborn Head's understanding of the specific needs related to this project and our experience in completing similar solid waste planning efforts, we propose to complete the Facilities Study within a three month period. The overall project duration is based upon completing the individual tasks that comprise the entirety of the project according to the following timeline:

Project Schedule	
TASK 1: Project Familiarization	Weeks 1 and 2
TASK 2: Current Site Optimization	Weeks 3 through 6
TASK 3: New Site Planning	Weeks 5 through 8
TASK 4: Regional Opportunities	Weeks 6 through 8
TASK 5: Report Preparation	Weeks 9 through 11
TOTAL	**11 weeks (~ 3 mos)**

Based upon the above schedule, if we were to receive an authorization to proceed with the project by the end of June 2017, we would expect to submit the Facilities Study Final Report to the Town by the end of September 2017.

Appendix A

Resumes

STEPHEN E. WRIGHT, PE
Project Manager/Lead Solid Waste Specialist

KEY AREAS OF PRACTICE

Transfer Station & Recycling Facility Design

Materials Handling Studies

Landfill Assessment & Closure

Solid Waste Planning & Permitting

Post-Closure Development

Construction Management

EDUCATION

MS, Civil Engineering, Northeastern University, Boston, MA, 1995

BS, Civil Engineering, University of Massachusetts, Amherst, MA, 1988

REGISTRATIONS / CERTIFICATIONS

Professional Engineer – MA

PROFESSIONAL AFFILIATIONS

Solid Waste Association of North America

Society of College & University Planners

Steve has 29 years experience on a wide-range of solid waste design, permitting and construction projects, including landfill designs, environmental assessments, closures, transfer station and materials recovery facility design, and solid waste management planning for municipal, private, and higher education clients.

Steve transfer station and recycling facility experience includes siting and feasibility studies, waste processing equipment evaluation and selection, and facility design and construction management. Through his planning, permitting, design, and construction experience he has gained an in-depth knowledge of federal and state solid waste regulatory requirements.

RELEVANT EXPERIENCE

EXPERIENCE WITH OTHER FIRMS

Transfer Station & Materials Recovery Facility, B-P Trucking, Hudson, MA

For over 15 years Steve has provided solid waste engineering services to B-P Trucking, a private waste hauling company serving the metro-Boston area. Since 2001 he has provided technical and regulatory compliance support in connection with B-P's operation of the Hudson, Massachusetts Transfer Station, as well as site evaluation and conceptual planning related to locating a new facility at other sites in eastern Massachusetts. With respect to the Hudson Transfer Station, Steve has designed upgrades that have improved access and use of the facility by separating residential drop-off operations from commercial operations resulting in more efficient waste handling, reduced vehicle conflicts, and improved public safety. Steve has also prepared recycling processing expansion plans for the transfer station that would add a materials recovery facility (MRF) adjacent to the existing transfer station. As part of the MRF planning and permitting effort, Steve evaluated recycling quantities, projected future processing demands, and identified facility sizing requirements and equipment processing needs, including baling equipment, compactors, conveyors, and sorting systems. Most recently, Steve has been working with B-P to identify a preferred site for the construction of a combined MSW/C&D transfer station and MRF. As part of this effort, Steve has prepared conceptual layout plans comparing development opportunities and challenges at multiple sites and the comparative cost implications of each.

Transfer Station & Recycling Facility, Derry, NH

Steve served as Project Manager and lead solid waste engineer on the planning and conceptual design for the improvements to the Town of Derry Transfer Station and Recycling Center. The facility consisted of several aging buildings with decentralized waste and recycling drop-off areas that were added to the site operations incrementally over time. These decentralized drop-off nodes contributed to extensive traffic congestion, safety concerns, and general inconvenience for residents, while contributing significantly to inefficient storage and processing of the Town's trash and recyclables. Derry's objective was to implement wholesale improvements to its existing operations, where a consolidated solid waste transfer station and recycling building equipped with a large dual ram horizontal baler would serve as the hub of the Town's material handling operations. Steve led the planning and conceptual design effort, which included a traffic evaluation, solid waste and recycling data review and projections, facility sizing, baler equipment evaluation, and preparation of

several alternative conceptual layout plans. The alternatives were developed to depict varying degrees of facility upgrades, from more modest site and building improvements to extensive alterations that included a 22,000 square foot transfer station and recycling facility. The results of the planning and conceptual design effort were presented in a comprehensive feasibility study for the facility, providing the basis for the Town's selection of the 22,000 square foot transfer station and recycling center. The new facility was constructed in 2015 and began operating in 2016.

Wellesley Recycling and Disposal Facility, Wellesley, MA

Steve served as Lead Design Engineer and Project Manager for the design, permitting and construction administration of this 3 million dollar renovation to the Town's existing Recycling and Disposal Facility (RDF). The improvements included the renovation and conversion of an abandoned incinerator building to a material recovery facility (MRF); modifying the residential recycling drop-off area; upgrading the residential solid waste disposal area; modifying the RDF transfer station; and improving the general layout of all RDF-related operations, including leaf and yard waste recycling activities, swap shop drop-off activities and book exchange operations. He had the lead role in preparing the design basis document which summarized all of the proposed design modifications, including site layout, solid waste handling equipment and recycling equipment needs, selective demolition activities, environmental impact issues and proposed architectural, structural electrical and mechanical upgrades. Steve also served as the technical specialist for solid waste and recycling equipment design issues. In this role, he was responsible for evaluating and specifying a wide assortment of solid waste and recycling equipment components, including a dual ram horizontal baler, conveyor systems, sorting platforms, sorting tables, gravity caster bins, solid waste compaction equipment and various roll-off containers for the storage and transport of solid waste and recyclable materials

New Bedford Transfer Station, New Bedford, MA

Steve served as Lead Design Engineer and Project Manager on this 300 ton per day solid waste transfer station facility. The transfer station had been developed to accommodate transfer trailers as the primary mode of off-site refuse disposal, however, a key component of the design was to enable the city to convert the station to a rail haul facility, should future economic conditions warrant implementation of the rail haul option. Under Steve's oversight, a removable baffle system was designed for the truck pit and included provisions for future installation of a rail car cover hoist system and expansion of the facility to accommodate over 500 tons of refuse per day. In addition to his design, project management, and regulatory coordination responsibilities, Steve also managed the construction administration effort.

Yarmouth/Barnstable Solid Waste Transfer Station, Yarmouth, MA

Steve served as senior project engineer responsible for managing the construction of this 500 ton per day regional rail-haul transfer station that serves the Towns of Yarmouth and Barnstable and a large commercial base within and around these Cape Cod communities. Given the size of the facility, its various unique design components, and its accelerated construction schedule, the construction management phase of the project demanded a particularly intensive coordination effort. This effort included the continual monitoring of the general contractor's critical path construction schedule, coordination of construction activities with the general contractor and filed subcontractors, attending coordination meetings with various town review boards, and in-house construction coordination with the project design team and Town stakeholders.

Waste Handling Facility, Middlebury College, Middlebury, VT

Steve served as Project Manager and Principal Engineer for the development of a conceptual design for an integrated recycling, solid waste, and hazardous waste material handling facility. The major components of the proposed waste handling facility include a materials recovery facility (MRF), construction and demolition (C&D) debris facility, hazardous waste storage facility, and waste oil storage facility. As principal design engineer he evaluated the college's waste stream data and reviewed its current and proposed materials handling practices. Steve's assessment of this information served as the basis for sizing the MRF, C&D facility, and storage facilities. In conjunction with his role as principal engineer, Steve served as technical specialist for the recycling equipment and hazardous waste storage design issues. In this capacity, Steve was responsible for evaluating bailing equipment, conveyor systems, shredders, and glass crushers, as well as handling and storage requirements for waste oil and hazardous materials.

Bristol Resource Recovery Facility, Waste Diversion Contingency Planning, Bristol, CT

Steve served as project manager and lead engineer on a study that evaluated potential waste diversion contingency options for the Bristol Resource Recovery Facility (BRRF). Working with the BRRF Operating Committee, which represents the fourteen member communities that rely on the BRRF to meet their waste disposal needs, Steve developed preliminary waste diversion options and implementation recommendations to address possible short- and long-term interruptions in service at the plant. Central to the planning effort was the evaluation of existing member community transfer stations to serve as satellite waste disposal hubs during a diversion scenario. In order to evaluate the feasibility of the satellite disposal hubs, Steve met with representatives from various communities to coordinate the potential diversion options and conducted transfer station site visits to evaluate potential site and operational modifications necessary to accommodate the proposed diversion program. The contingency planning required a thorough understanding of the existing BRRF waste stream in order to accurately assess how the waste stream could be redistributed to satellite disposal hubs.

Methuen Transfer Station, Methuen, MA

As Project Engineer, Steve was responsible for providing construction management services in connection with this $1.5 million, 130 ton per day solid waste transfer station facility. His responsibilities on the project included field supervision of construction activities, coordinating shop drawing reviews between support disciplines, responding to questions raised during construction, and conducting routine meetings with both the Client and the Contractor.

RONALD ST. MICHEL, P.E.
Solid Waste Specialist

KEY AREAS OF PRACTICE

Transfer Station Design & Construction

Environmental Site Assessments

Landfill Closure Design

Landfill Gas Collection & Treatment

Superfund Final Remedy Design & Construction

Operation & Post-Closure Compliance Monitoring

EDUCATION

B.S., Civil Engineering. Northeastern University, Massachusetts, 1991

REGISTRATIONS / CERTIFICATIONS

Professional Engineer – MA

PROFESSIONAL AFFILIATIONS

Solid Waste Association of North America (SWANA).

American Society of Civil Engineers (ASCE)

Ron has 24 years of solid waste engineering, storm water and construction experience. As lead design engineer and project manager, Ron has worked on a full range of solid waste and storm water assignments, including landfills, landfill gas, solid waste handling facilities, Environmental Protection Agency (EPA) Phase II General Permits and storm water inflow studies.

Ron's landfill experience includes environmental site assessments, landfill closure design, landfill gas collection and treatment, EPA Superfund final remedy design and construction, operation and post-closure compliance monitoring.

RELEVANT EXPERIENCE

Southbridge Recycling and Disposal Park, Inc., Southbridge, MA

Ron is the Project Manager for control system design, permitting, and operations, addressing landfill gas, landfill cell construction, supervisory control and data acquisition (SCADA), electrical engineering, stormwater management, air permitting, and expansion planning and permitting.

Solid Waste Transfer Station and Recycling Center, Derry, NH

Ron prepared a feasibility study for the design of a municipal solid waste transfer station and recycling facility to replace an antiquated and undersized existing facility. The study included a traffic evaluation, solid waste and recycling tonnage projections, facility sizing, baler equipment evaluation and development of three layout concepts. The study provided for improved site traffic flow through the facility, elimination of equipment and user interfaces, increase in source separated recyclable materials, increased bale storage, provisions for improved construction and demolition debris management, including potential for regional expansion, new truck scales and stormwater management. The study provides for accommodations for both residential and commercial use of the facility.

Recycling Center, Corpus Christi, TX

Prepared a feasibility study for a citizen's collection center. The study included conceptual layout options for the collection of solid waste and recyclables (single stream, tires, white goods, waste oil, hazardous chemicals, and brush & yard wastes). The study allowed the City to determine if it should purchase the privately owned property and proceed with the project.

Solid Waste Tipping Fee Study, Salt Lake Valley Solid Waste Management Facility, Salt Lake County, UT

Prepared a Waste Tipping Fee Study for the Salt Lake Valley Solid Waste Management Facility. The Study evaluated national and regional solid waste and recycling trends, landfill and transfer station operating costs, market comparison of private and public landfills and transfer stations, hauling costs, regional disposal capacities, potential effects of fee increases and provided recommendations. The Study provided justification for the County to increase fees at the landfill and transfer station and increase revenues to match annual operating, maintenance and capital improvement costs.

Solid Waste Transfer Station and Recycling Center, Laconia, NH

Ron managed the construction of a 600-ton per day solid waste transfer station for the City of Laconia, NH and Waste Management of New Hampshire. The facility included the construction of a new transfer station for commercial vehicles and a separate solid waste handling and recycling areas for the residents of Laconia improving site safety and operational efficiency.

Solid Waste Transfer Station and Recycling Center, Weston, MA

Ron managed a multi-discipline design of a solid waste transfer station and recycling center. Ron designed an on-site wastewater disposal system, an interim transfer station, permanent compactors and authored all equipment specifications. Unique design aspects included: strict site constraints due to the proximity of a surface water supply and the Town's landfill; dual compactor system and a recycling area designed for both commercial and residential use; and maintaining on-site solid waste operations, at the interim transfer station during construction of the permanent facility. Ron managed the bidding of the $1.37 million project that included filed sub-bids. Ron also managed the construction phase, obtained the Permit to Operate and prepared the facility's operation and maintenance manual.

Solid Waste Transfer Station and Recycling Center, Bolton, MA

Ron designed a solid waste transfer station and recycling center. Unique aspects to this transfer station include restrictions imposed by the Riverways Protection Act, an alternative surface water treatment system, project phasing with the landfill closure design/grading plan and the Town's salt shed, maintaining proper vehicle turning radii on a very small site, and avoided additional Site Assignment Permitting by placing solid waste handling operations on the landfill lot and placing recycling operations on the adjacent lot.

Solid Waste Transfer Station, Provincetown, MA

Ron provided permitting and design guidance to the Town of Provincetown Department of Public Works. Ron recommended design improvements, the compaction equipment supplier and evaluated the qualification of the construction contractor. Ron also provided construction management services on a fast track project. Ron represented the Town at a number of meetings with Town officials and counsel, the Cape Cod National Seashore, the Cape Cod Commission, MassDEP and representatives of U.S. Congressman's Gary Studs office to complete this project.

DEREK T. LONG, E.I.T
Project Engineer

KEY AREAS OF PRACTICE

Solid Waste Engineering and Remediation

Civil/Environmental Engineering

Geotechnical Engineering

Construction Monitoring

EDUCATION

B.S., Civil Engineering, University of New Hampshire, 2012

REGISTRATIONS

Engineer-in-Training – NH

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers

The National Engineering Honor Society, Tau Beta Pi

Solid Waste Association of North America

Derek has over five years experience in solid waste and geotechnical engineering projects. His main focus includes permitting, design, and construction of facilities located throughout Massachusetts, Vermont, New York and New Jersey. Derek has provided field observation and has experience with compaction density testing, soil screening, pavement testing and soil nail verification and proof testing.

RELEVANT EXPERIENCE

Southbridge Recycling and Disposal Park, Air and Landfill Gas Operations and Compliance, Southbridge, MA

Prepared gas probe location worksheet and figures for the semi-annual report. Conducted landfill gas calculations and sequential expansion plan set.

Southbridge Recycling and Disposal Park Expansion, Construction Services, Southbridge, MA

Assisted with the preparation of design and construction documents, including plans and specifications for permitting and construction for expansion. Performed construction monitoring that included compaction density testing.

Southbridge Recycling and Disposal Park, Landfill Design/Permit/Operations Services, Southbridge, MA

Assisted with cap repair gas plans and provided on-site construction quality assurance observation. Prepared stormwater design, plan set and specifications. Assisted with the interceptor trench, facilities area and stormwater design. Prepared bid package and bid set plans. Responsible for the special permit application.

Southbridge Recycling and Disposal Park, Gas Collection and Control System Design/Permit/Operations Services, Southbridge, MA

Provided landfill gas pipe field testing, on-site construction quality assurance observation and the landfill gas well as-built design.

Southbridge Recycling and Disposal Park, Construction Services, Southbridge, MA

Assisted with the preparation of design and construction documents, including plans and specifications, for permitting and construction of the Phase 7.4 expansion. Performed construction monitoring that included compaction density testing.

Hull Landfill, Design/Permit/Operations, Hull, MA

Prepared capacity update and volume worksheets.

Turnkey Landfill, Gas Collection and Control System Design/Permit/Operations, Rochester, NH

Assisted with landfill gas design revisions and plan set.

JENA L. SHAW
Engineer

KEY AREAS OF PRACTICE

Solid Waste Engineering

Environmental Engineering

Construction Monitoring

EDUCATION

B.S., Environmental Engineering, Suffolk University, 2012

PROFESSIONAL AFFILIATIONS

Environmental Business Council

Society of Women Environmental Professionals

Engineers Without Borders – NH Professional Chapter

Jena has over three years of experience working on solid waste and geotechnical projects throughout New England. Her main focus includes permitting and design portions for solid waste expansion projects, field support for geotechnical construction projects, and air quality permitting assistance. Jena's construction activities include particulate matter and sound monitoring, onsite surveying, well drilling and decommissioning, and landfill geosynthetics installation.

Prior to joining Sanborn Head, Jena worked as an Air Quality Engineer providing support in Title V permitting, source registration, and greenhouse gas emission reporting. She performed indoor air quality assessments as well as sound, dust, and odor monitoring for a variety of clients, both private and public. Additionally, she assisted clients in routine groundwater sampling events at landfills and decommisioned gas stations.

RELEVANT EXPERIENCE

BP Trucking Transfer Station, General Consulting, Hudson, MA

Generated transfer station conceptual layout plans for multiple site and prepared annual compliance reports.

Central Landfill, Landfill Gas Engineering Services, Johnston, RI

Prepared the volatile organic compounds calculations and assisted with compliance reporting.

Southbridge Recycling and Disposal Park, Air and Landfill Gas Operations and Compliance, Southbridge, MA

Provided air and landfill gas reporting assistance and responsible for the gas collection and control system design plan.

Southbridge Recycling and Disposal Park Expansion, Construction Services, Southbridge, MA

Assisted in preparing the siting criteria application for expansion and continues to support mapping designs and figures that demonstrate compliance with specific siting criteria.

Southbridge Recycling and Disposal Park, General Consulting, Southbridge, MA

Prepared figures for surveying and wetlands flagging. Researched the limit line and groundwater sampling protocol pertaining to the public water source.

Casella Hyland Landfill, Air and Landfill Gas Services, Angelica, NY

Assisted with Title V reporting and emissions inventory statement.

Southbridge Recycling and Disposal Park, Residential Wells, Southbridge, MA

Assisted in reviewing residential well impact documents and performed the residential well packer testing, slug testing and sampling. Performed well development following the installation of replacement monitoring wells.

Southbridge Recycling and Disposal Park Leachate Facilities and Residential Drop-off, Permit and Design Services, Southbridge, MA

Assisted in the production of figures for the Facilities Area modification application and bid documents for facilities construction project.