



MEMORANDUM

TO: Karla Smith-Hardison, TCEQ
David Hitchcock, HARC

FROM: Sam Wells, Starcrest
Richard Billings, Heather Perez, Rick Baker and Paula Fields, ERG

DATE: November 15, 2004

SUBJECT: Summary of Houston/Galveston Area Railroad Data Collection and Model Development

1.0 Overview

The objective of this project is to improve locomotive emission estimates for the Houston/Galveston area. Recent studies have indicated that locomotive emission estimates are associated with a large degree of uncertainty because the data elements needed to accurately calculate emissions were often not readily available. There is also considerable error between estimates based on fuel consumption versus activity. Currently, there are no state, federal, or local statutes requiring railroads to provide the necessary data to estimate emissions, although the Texas Commission on Environmental Quality (TCEQ) does have a Memorandum of Understanding with the two class I railways in Texas. In the absence of system-wide requirements, stakeholders are reluctant to spend time and resource compiling the necessary data.

In this project, Starcrest and ERG staff have consulted with the two most important railroad companies servicing the Houston/Galveston area to provide as detailed data as possible to develop accurate estimates of emissions from locomotives operating in the area.

Initially, it was envisioned that the railroads would provide event recorder data to develop profiles of the horsepower by throttle notch setting and locomotive speed for individual railway segments. Unfortunately, event recorder data has turned out to be difficult to obtain and convert into a format appropriate for this inventory effort. Instead the two major railroad companies Union Pacific (UP) and Burlington Northern Santa Fe (BNSF) provided information by railway segment for their line haul operations, using the Gross Ton-Mile (GTM) method. These line-haul as well as switch locomotive data are discussed in Section 2.2 and the submitted data are included in the Appendix.

The railroad activity data elements were compiled into a Microsoft Access database along with emission factors recently developed for the EPA's locomotive rulemaking. Preliminary locomotive emission estimates for the Houston/Galveston area are summarized in Section 2.3 of this memorandum.

The activity data elements and emission factors were compiled in terms suitable for the development of a locomotive emission estimating model that can be used by different shareholders to estimate emissions. At this time, we anticipate that the model will be developed as an Access database. By using a relational database system, such as Access, data tables can be easily updated to incorporate new activity data elements and emission factors. A preliminary structure for the model is discussed in Section 2.3.

Section 2.4 discusses the steps that will be taken to finalize the model and provide an appropriate training session, in support of the model.

In Section 3.0 of this report, there is a discussion of issues that need to be addressed in the follow-on project to ensure that the model is developed correctly.

The references that support this memorandum are listed in Section 4.0.