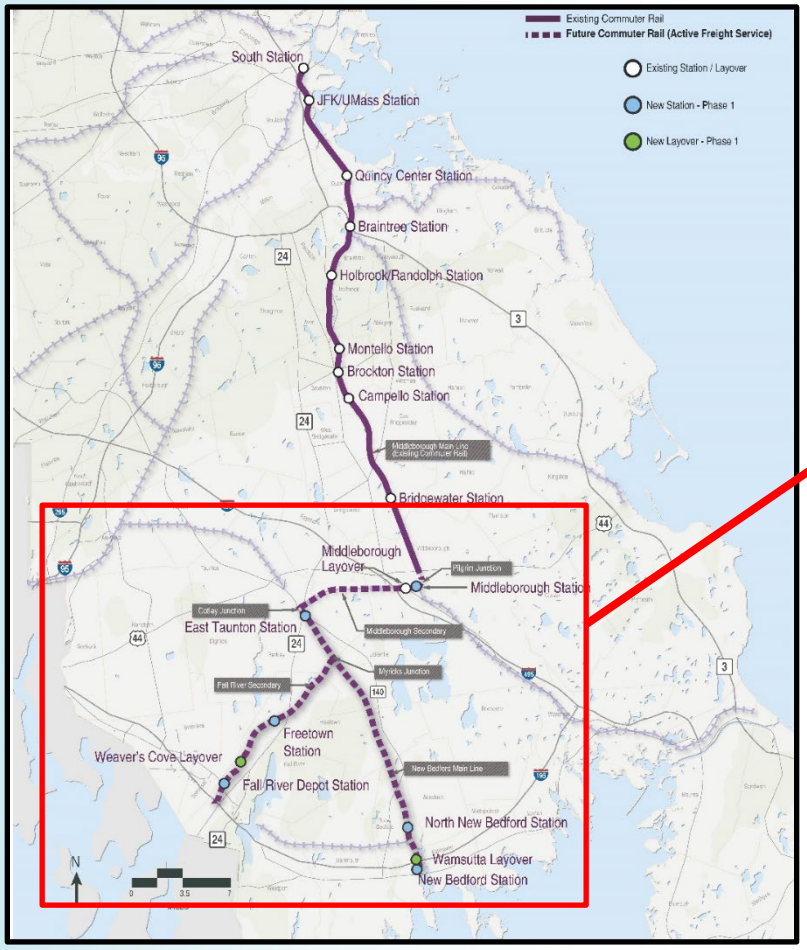
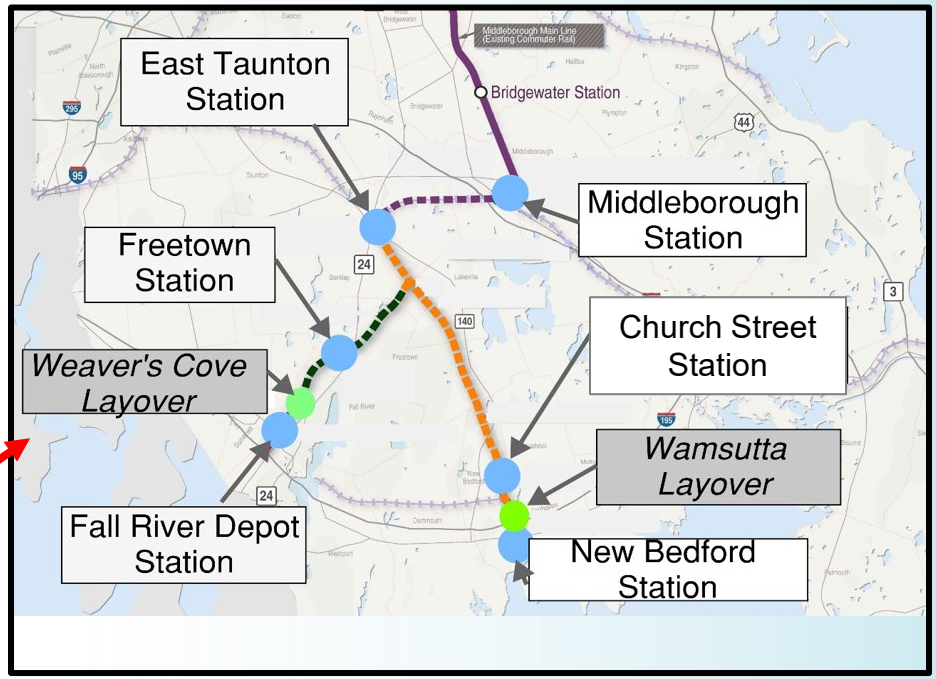
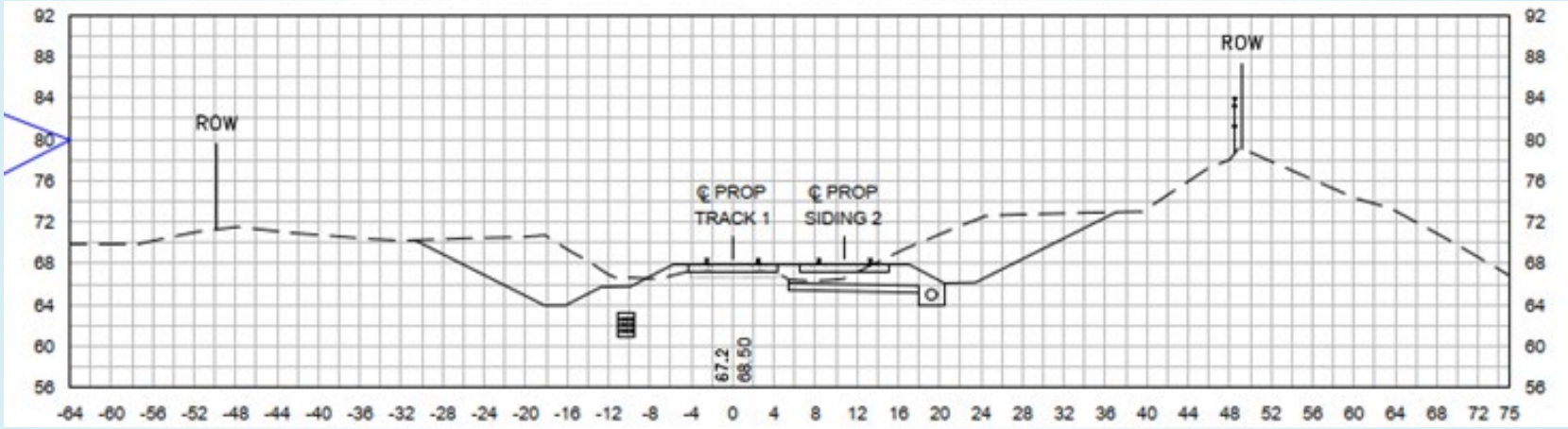
Project Overview





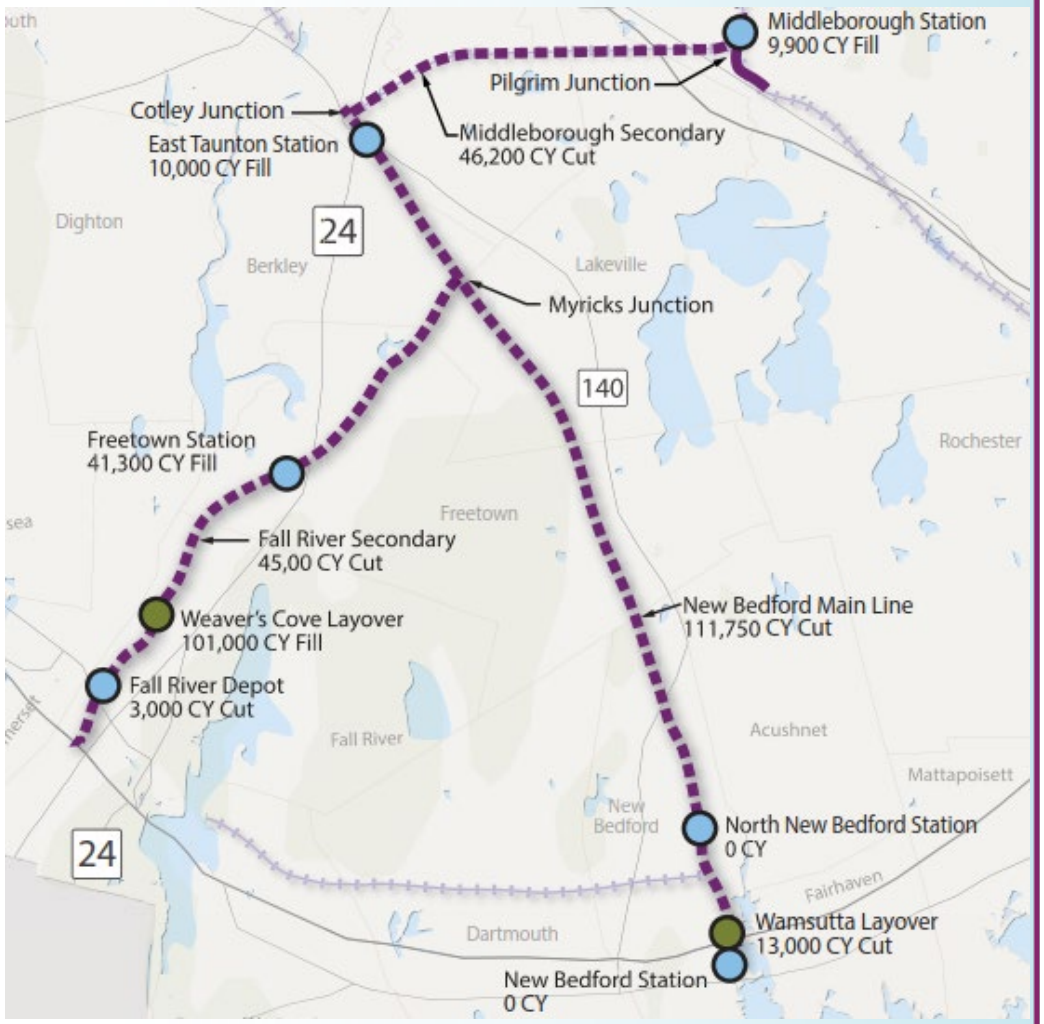
Nature of Issue

- Historic activities along railroad ROW and at station sites has resulted in soil contamination:
  - Varying concentrations of arsenic, PAHs/SVOCs
  - Highest concentration in soils in immediate proximity to tracks
- Over 400,000 CY of excavated materials expected.



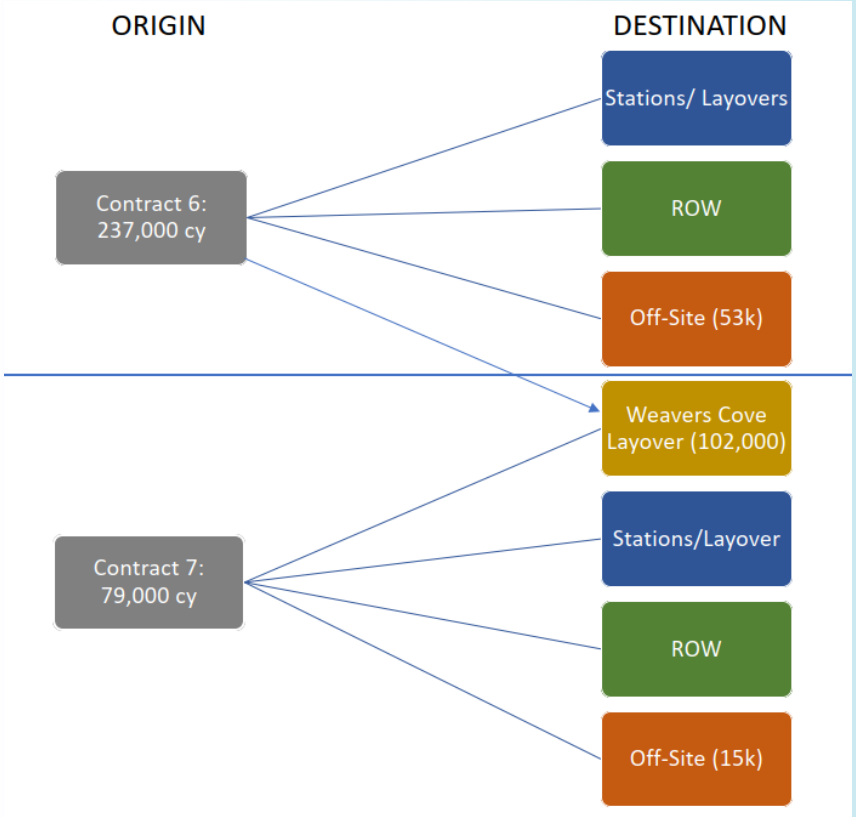
Program Objective:

To manage large volumes of excavated soil and ballast materials in a cost effective manner, with consideration given to material re-use within the program and project areas.



Environmental Benefits of Re-Use Objective

- Reduce waste & preserve landfill space
- Reduce consumption of natural resources
- Reduce truck mileage
  - From both import of material and for off-site trucking
- Recognize current limited capacities of landfills, and Arsenic criteria.



Design Development

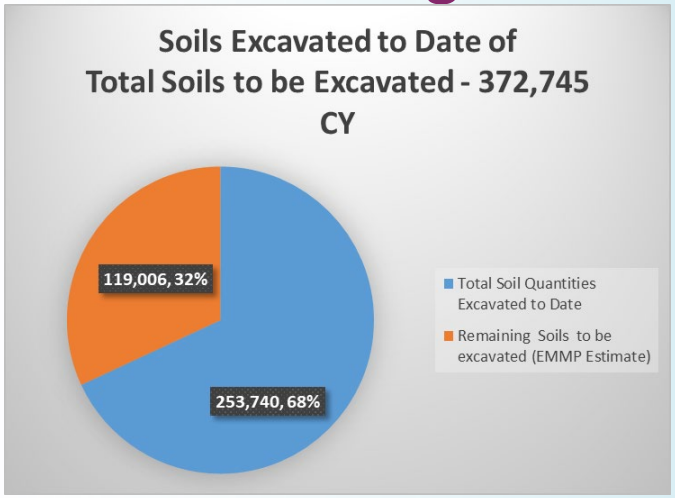
- Regulatory Framework (MCP)
  - Special Project Designation
  - Coordination with MassDEP on beneficial re-use approach.
  - MCP exemption for railroad soils
- Engineering evaluation and development of re-use goals:
  - Estimate materials volume by category
    - Contaminated vs clean
    - Geotechnical criteria (ballast, sub-ballast, fill, topsoil)
  - Cut-fill balance (program-wide and by project)
  - Conservative goals for re-use (75% re-use target)
- Develop construction contract framework to achieve goals
  - Fill Management Plans
  - Contract Schedule Milestones
  - Inter-Contract Volumes and Allowances
  - Disposal Allowances

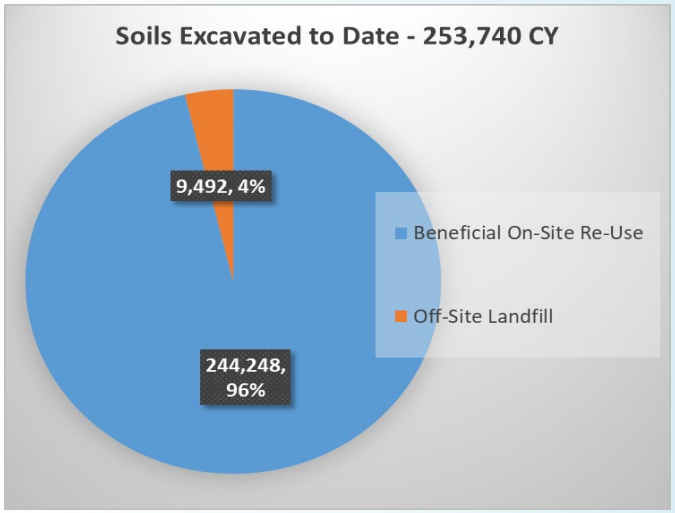
Contract and Construction Stage

- Excavated Materials Management Plan (EMMP)
  - Material shipping records (MSRs)
- Material Management and Segregation, Dust Control
- Soil Transfer Documentation
  - PMCM field oversight
  - Re-use goals, KPIs
- Contractor Collaboration

Program Management / Construction Management

- Contractor Incentives, Cooperation, Coordination
- Monetary Comparisons from Client Perspective
- SCR Program Metrics to Date
  - 252,740 cy transferred (68%) vs 119,006 cy remaining (32%)
  - Beneficial on-site reuse 244,248 cy (96%) vs offsite disposal 9,492 cy (4%)

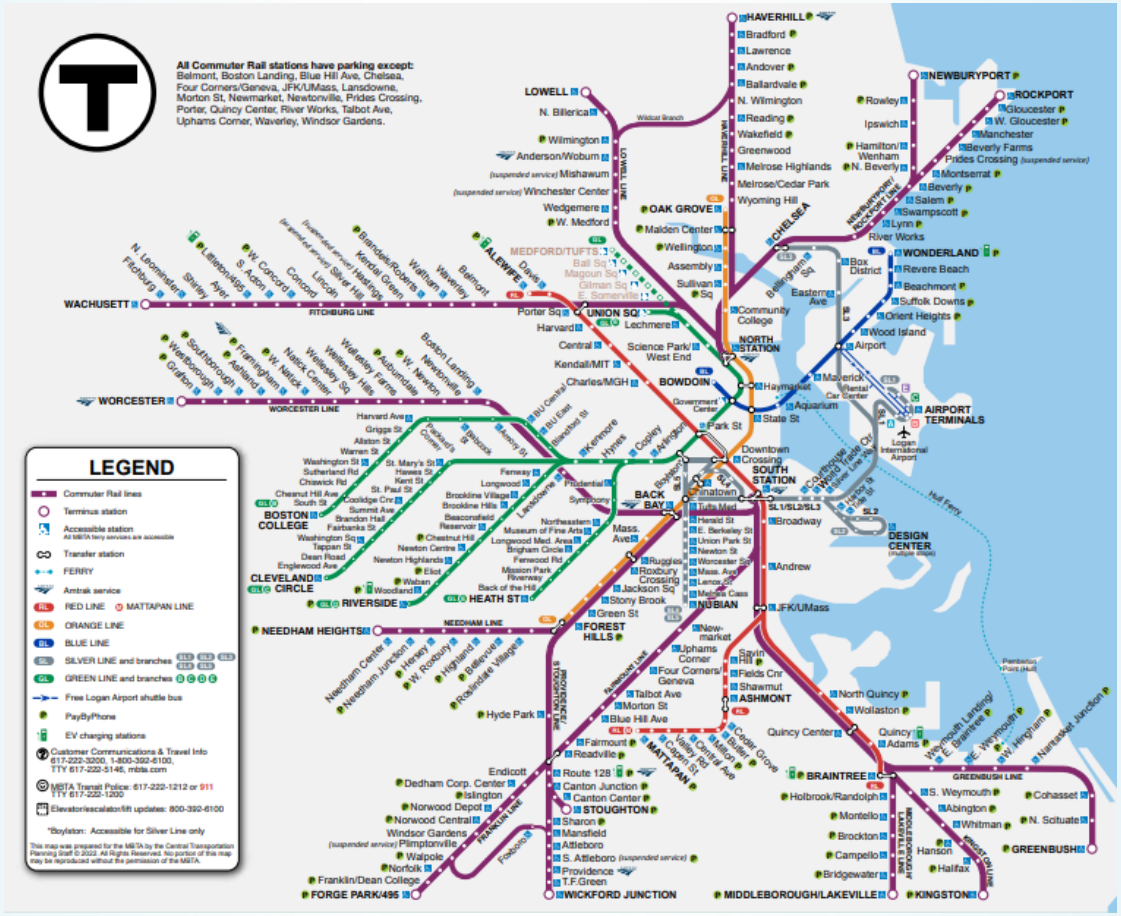




Lessons Learned and Key Aspects

- Planning:
  - Outreach to regulators
  - Sequencing of Soils Excavated vs Placed
  - Spacial Constraints within Project and for Staging areas
  - Material restrictions (chemical, geotechnical)
- Geotechnical Re-Use Criteria
  - Ballast, sub-ballast, structural fill, ordinary fill, topsoil
- Contractor Commitment
  - Coordination critical on all levels
  - Material processing vs importing new material

Application to MBTA Projects & Footprint



Key Contributors

- MBTA as Owner
- MassDEP Southeast Region
- Designer: VHB + HNTB
- PMCM: AECOM + HDR
- Early Action Culvert and Bridge Contracts
  - JF White, Charter, Mabbett
- Fall River Secondary – DW White + Skanska Joint Venture
  - Prime Engineering
- Middleborough Secondary & New Bedford Mainline – The Middlesex Corp. & Tutor Perini Joint Venture
  - Strategic Environmental Services
- MassDOT
- MassCoastal Railroad

Questions