OSC Overview & Summary
EPA has developed and implemented an air monitoring plan to sample for landfill constituents (COC's, RIM), in conjunction with the Responsible Party (RP), prior to and during the construction of the isolation barrier (IB) being built to contain the RIM in OU-1, that could be impacted by the SSE or landfill fire. *The goals and objectives are to document background conditions off the site prior to construction activities and to also monitor during construction activities to determine if any releases are occurring above health based benchmarks, and then to end the monitoring at the conclusion of the barrier installation.*

EPA / START are responsible for the air monitoring and sampling plan, air sample collection, analysis and summary of laboratory data, and preparation and submittal of documents and data transmittal reports to the EPA internal programs (i.e. ATSDR, AWMD, ENSV, etc.). START will assist EPA in the collection of air monitoring data and air samples as well as some data reduction and reporting tasks. Air monitoring activities will consist of screening surveys to measure air quality around the Site using remote sensing and direct-reading instruments. Air sampling activities will consist of the collection of samples of air using specific sampling procedures, equipment, and laboratory analytical testing of air samples. In general, these activities will be conducted off-site near the perimeter of the Site or within the general vicinity of the Site at locations in the surrounding community.

EPA current air sampling strategy and methodology
An air monitoring network was established at the perimeter of the WLLS in accordance with the "Quality Assurance Project Plan (QAPP) for Baseline Off-Site Air Monitoring and Sampling, West Lake Landfill Site; Bridgeton, MO" Daily air monitoring activities began at this network approximately in April 2014. ***The purpose of this sampling effort is to document off-site concentrations of contaminants of concern before construction of the isolation barrier.*** Monitoring is being conducted for radiological parameters (including alpha-, beta-, and gamma-emitting radionuclides on particulates; radon; and external gamma exposure), as well as typical solid waste landfill gases (including sulfur dioxide, hydrogen sulfide, and volatile organic compounds).

Five station were selected in/around the Bridgeton area to ensure complete coverage around the perimeter of the WLLS and nearby residential populations. Each station has one or more of the following monitoring equipment: AreaRae for COC's; Summa canister for VOC's; Radiello's for VOC's and H2S; TLD's; Particulate Monitor; E-Perms; Gamma Tracers and the EPA trailer location houses the only ECAM. Data collected from the monitoring activities will be used to assess and document the air quality along the boundaries of the site, and to evaluate the potential exposure of the nearby surrounding community to airborne contaminants prior to and during IB construction.

Data analysis
Sampling frequency: AreaRaes – 8 hour TWA's (instantaneous monitoring); Summa canister – 1 - 24 hour average –weekly (no longer used after Jan 1, 2015); Radiello's – bi-weekly; TLD's - monthly; particulate air samplers - weekly; E-Perms – weekly (no longer used after Jan 12, 2015); Gamma Tracer, averaged hourly as uR/hr over 24 hrs; and ECAM - averaged hourly as uR/hr over 24 hrs (instantaneous monitoring). The baseline sampling period began in early April 2014, and was proposed to end prior to initiation of the isolation barrier construction, initially anticipated to start in September 2014.

Data usage
This Plan provides for ambient air quality monitoring (radiation-related only) in and around Westlake before and during the IB planned construction. Air sampling and direct gamma radiation monitoring data collected by the air monitoring stations may be used to:

1) Characterize the baseline conditions at the site;
2) Monitor exposure pathways by sampling and analysis before and during construction activities;
3) Assess the potential for releases of radioactive materials or contaminants from the site;
4) Determine when to cease air monitoring, sampling and analysis if the data doe4s not support continued monitoring or the IB is not constructed.

Administrative cost
The recurring (weekly) expenses for START at West Lake are primarily labor and analytical expenses:
Labor: $7,500/week (Includes the cost for principals, scientist, engineers, technicians, admin staff, etc.). START staff are available on site about 7 – 9 hours/day; 5-6 days/week as needed.
Analytical: $3,300/week (includes equipment, supplies, analytical measurement & analysis at each station, etc.).

The approximate monthly total is $43,200 / $561,600 annually (*I have not included the cost associated with EPA staff, trailer rent, electricity, internet, porta-johns, meteorological stations, miscellaneous equipment and/or supplies, etc.*). Expenditures to date are approximately $431, 744.00.

Discussion
Since the inception of this air monitoring sampling plan, additional consideration has taken place regarding the proposed construction start date of the isolation barrier, including potentially using an alternative barrier system design and technology on site. This has caused the proposed start date of isolation barrier construction to be delayed from the original projection of September 2014 to an estimated winter 2016 timeframe. Additionally, if alternative construction and design options are employed, the nature and extent of potential emissions may change dramatically.

To date, approximately seven (7) months of monitoring data has been collected which spans the entire summer season. Data were collected in accordance with the frequencies defined in Tables 1A and 1B of the QAPP which was based upon a projected barrier construction start of September 2014. *To date, the data has been found to be consistent with "normal" background levels in the St. Louis metropolitan area.*

Due to the extension of the barrier construction date, EPA needs to amend its air monitoring and sampling network. To this end, EPA has proposed to modify its community perimeter monitoring approach to measure/monitor RIM, as the primary contaminant of concern; as MDNR does not have the capability or assets to monitor or sample this exposure pathway. EPA also proposes that MDNR continue to operate its air monitoring system to address Bridgeton VOC type emission concerns.

Options
Modifying the ambient air monitoring stations will allow for collection of data representative of working condition if/when the IB gets built. Harmonizing the off-site sampling and analysis procedure with the on-site monitoring technique will afford greater data comparability for the purpose of identification and apportionment of landfill emissions. In addition, implementation of this proposal will result in significant cost savings in field operations, data management, and laboratory analytical costs.

Available options:

- *Monitor and collect only continuous automated data system measurements (i.e. AreaRae, ECAM, Gamma Tracer) that can be transmitted electronically, until the barrier construction starts*
- *Monitor and collect only radiological(RIM) data system measurements (i.e. ECAM, Gamma Tracer, TLD, Particulates), until the barrier construction starts*

- *Discontinue monitoring at all five sites and demobilize equipment because the data does not support continued monitoring (i.e. background monitoring parameters are not being exceeded)*

Each of these options has inherent costs related to on-site support (i.e. staffing, labor, O & M, QA/QC, data management). The most economical approach is recommended (discontinue monitoring).

Project schedule

EPA's air monitoring oversight work begin in April, 2014, and the PRP's pre-construction field work is expected to begin sometime in 2016. Republic estimates the field work to take 12 – 18 months to complete.

Data review

The data is analyzed by Test America Laboratories, Inc., and reported to EPA's START Contractor, Tetra Tech, Inc. Tetra Tech, Inc., has provided summaries to EPA for further review. Currently the data is being reviewed by EPA (ATSDR, AWMD, SUPR, ENSV) and EPA-ERT staff. A Data Quality Objective Team was established with the intent of reviewing the data to determine "background" concentrations before the IB was built. The team was charged to review all data (VOC, radiation, ambient air) for comparison with other similar data collected in the St. Louis metro area.

In addition to the data collected to date will be compared with the historical data collected by Missouri Department of Natural Resources Air Program at the St. Louis National Air Toxics Trends Site (NATTS). Although the Westlake data have only been collected since May 2014, the NATTS data provide a long-term trend for the detection of VOCs in the St. Louis metro area to which the Westlake data may be compared.

Data management

Information gathered by the air monitoring and sampling activities may be used to decide if air quality at the perimeter of the site and surrounding community is similar to other areas within the greater St. Louis metropolitan area. If review of the data identifies similar "background" conditions, then a decision must be to end the ambient air monitoring program. However, if the data shows "elevated" conditions of concern in the surrounding community, then the data will be used to help determine the cause of concern and to aid decision-makers in selecting a course of corrective action. The air monitoring and sampling system then will continue collecting data to document any corrective action's impact and provide quantitative metrics to decision-makers evaluating the effectiveness of a corrective action.

Data release

To be determined by management