Dave Yost • Auditor of State

The State of Ohio, Auditor of State

Ohio Environmental Protection Agency Performance Audit June 2015

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Dave Yost · Auditor of State

To the Governor's Office, General Assembly, Director and Staff of the Ohio Environmental Protection Agency, Ohio Taxpayers, and Interested Citizens:

It is my pleasure to present to you this performance audit of the Ohio Environmental Protection Agency (OEPA or the Agency). This service to OEPA and to the taxpayers of the state of Ohio is being provided pursuant to Ohio Revised Code § 117.46 and is outlined in the letters of engagement signed November 21, 2014.

This audit includes an objective review and assessment of selected program areas within OEPA in relation to industry standards, comparative models, and leading practices. The Ohio Performance Team (OPT) of the Auditor of State's (AOS) office managed the project and conducted the work in accordance with Generally Accepted Government Auditing Standards.

The objectives of this engagement were completed with an eye toward analyzing the Agency, its programs, and service delivery processes for efficiency, cost-effectiveness, and customer responsiveness. The scope of the engagement was confined to the areas of Fleet Management, Laboratory Operations, Certified Professionals, Solid Waste Operator Certification, and Solid Waste Fee Collection Operations.

This report has been provided to OEPA and its contents have been discussed with Agency leadership, division leadership, program specialists, and other appropriate personnel. The Agency is reminded of its responsibilities for public comment, implementation, and reporting related to this performance audit per the requirements outlined under ORC § 117.461 and § 117.462. The Agency is also encouraged to use the results of the performance audit as a resource for improving overall operational efficiency as well as service delivery effectiveness.

Sincerely,

Dave Yost
Auditor of State

June 30, 2015

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I. Engagement Purpose and Scope

Ohio Revised Code (ORC) § 117.46 provides that the Auditor of State (AOS) shall conduct performance audits of at least four state agencies each budget biennium. In consultation with the Governor and the Speaker and Minority Leader of the House of Representatives and the President and Minority Leader of the Senate, the Auditor of State selected the Ohio Environmental Protection Agency (OEPA or the Agency) for audit during the fiscal year (FY) 2013-15 Biennium, encompassing FY 2013-14 and FY 2014-15.

Prior to the formal start of the audit, the Ohio Performance Team (OPT) and OEPA engaged in a collaborative planning process which included initial meetings, discussion, and assessments. Based on these planning activities AOS and OEPA signed a letter of engagement, marking the official start of the performance audit, effective November 21, 2014.

The letter of engagement established that the objective of the audit was to review and analyze selected areas of OEPA operations to identify opportunities for improvements to economy, efficiency, and/or effectiveness.

The letter of engagement led to OPT planning and scoping work, in consultation with OEPA, which identified five distinct scope areas including:

- Fleet Management;
- Laboratory Operations;
- Certified Professionals;
- Solid Waste Operator Certification; and
- Solid Waste Fee Collection Operations.

Based on the established scope, OPT engaged in supplemental planning activities to develop detailed audit objectives for comprehensive analysis. See **Section VII: Audit Scope and Objectives Overview** for an overview of scope areas and audit objectives.

II. Performance Audit Overview

The United States Government Accountability Office develops and promulgates Government Auditing Standards that provide a framework for performing high-quality audit work with competence, integrity, objectivity, and independence to provide accountability and to help improve government operations and services. These standards are commonly referred to as generally accepted government auditing standards (GAGAS).

Performance audits are defined as engagements that provide assurance or conclusions based on evaluations of sufficient, appropriate evidence against stated criteria, such as specific requirements, measures, or defined business practices. Performance audits provide objective analysis so that management and those charged with governance and oversight can use the information to improve program performance and operations, reduce costs, facilitate decision making by parties with responsibility to oversee or initiate corrective action, and contribute to public accountability.

OPT conducted this performance audit in accordance with GAGAS. These standards require that OPT plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for findings and conclusions based on the audit objectives. OPT believes that the evidence obtained provides a reasonable basis for our findings and conclusions based on the audit objectives.

III. Methodology

Audit work was conducted between November 2014 and June 2015. To complete this report, AOS staff worked closely with OEPA staff to gather data and conduct interviews to establish current operating conditions. This data and information was reviewed with staff at multiple levels within OEPA to ensure accuracy and reliability. Where identified, weaknesses in the data obtained are noted within the report where germane to specific assessments.

To complete the assessments, as defined by the audit scope and objectives, OPT identified sources of criteria against which current operating conditions were compared. Though each source of criteria is unique to each individual assessment there were common sources of criteria included across the audit as a whole. These common sources of criteria include: statutory requirements such as contained in ORC or Ohio Administrative Code (OAC), OEPA internal policies and procedures, other State agency policies and procedures, industry standards, government and private sector leading practices, and other state comparisons. Although OPT reviewed all sources of criteria to ensure that their use would result in reasonable, appropriate assessments, OPT staff did not conduct the same degree of data reliability assessments as were performed on data and information obtained from OEPA.

The performance audit process involved information sharing with OEPA staff, including preliminary drafts of findings and proposed recommendations related to the identified audit scope and objectives. Status meetings were held throughout the engagement to inform the Agency of key issues, and share proposed recommendations to improve or enhance operations. Input from the Agency was solicited and considered when assessing the selected areas and framing recommendations. The Agency provided verbal and written comments in response to various recommendations, which were taken into consideration during the reporting process. Where warranted, the report was modified based on agency comments.

This audit report contains recommendations that are intended to provide the Agency with options to enhance its operational economy, efficiency, and effectiveness. The reader is encouraged to review the recommendations in their entirety.

IV. OEPA Overview

Responsibilities and Mission

OEPA is a cabinet-level Agency and, as such, the Director of Environmental Protection (the Director) is appointed by, and serves at the pleasure of, the Governor. As a State agency, OEPA is generally charged with protecting the State's environment and public health by ensuring compliance with environmental laws.

The Agency's mission is, "To protect the environment and public health by ensuring compliance with environmental laws and demonstrating leadership in environmental stewardship."

To carry out its mission, "OEPA establishes and enforces standards for air, water, waste management, and cleanup of sites contaminated with hazardous substances. The Agency also provides: financial assistance to businesses and communities; environmental education programs for businesses and the public; and pollution prevention assistance to help businesses minimize their waste at the source."

Organizational Structure

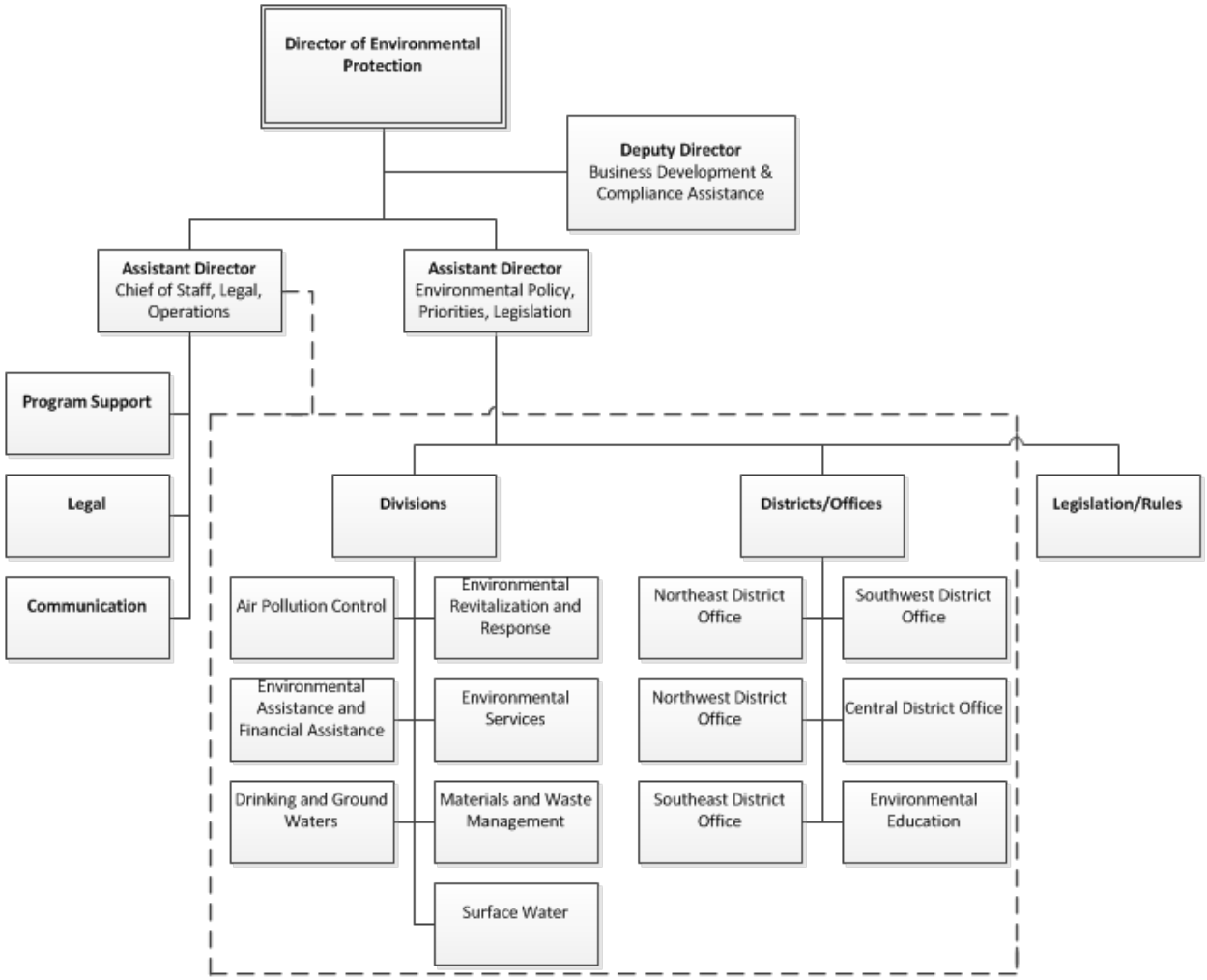
With oversight from the Director, OEPA carries out its statutory responsibilities and mission through seven divisions, including:

- Air Pollution Control;
- Environmental Response and Revitalization;
- Materials and Waste management;
- Drinking and Ground Waters;
- Surface Water Protection;
- Environmental and Financial Assistance; and
- Environmental Services.

In addition to the seven divisions, there are three offices, including:

- Special Investigations;
- Environmental Education; and
- Compliance Assistance and Pollution Prevention.

The following graphic illustrates both the basic organizational structure and the leadership hierarchy of the Agency.



Note: The dotted line represents a shared organizational oversight between the two assistant directors for both the Divisions and the Districts/Offices.

Organizational History/Relationship to US Environmental Protection Agency (USEPA)

The USEPA was created by the Nixon Administration in 1970 with its mission centering around:

- The establishment and enforcement of environmental protection standards consistent with national environmental goals;
- The conduct of research on the adverse effects of pollution and on methods and equipment for controlling it; the gathering of information on pollution; and the use of this information in strengthening environmental protection programs and recommending policy changes;
- Assisting others, through grants, technical assistance and other means, in arresting pollution of the environment; and
- Assisting the Council on Environmental Quality in developing and recommending to the President new policies for the protection of the environment.

Shortly thereafter, OEPA was created in 1972 through the recombination of various environmental programs that previously had been scattered throughout several State departments and programs.

The USEPA develops enforcement programs and uses policies and guidance to assist the regulated community to interpret and implement the regulations. Federal environmental laws set national standards for environmental protection, and provided that a state can assume primary responsibility enforcing these standards, it adopts laws that are at least as stringent as the federal laws. OEPA has assumed this responsibility through delegation of specific programs. The USEPA continues to have enforcement authority in all cases, and retains oversight responsibility over states' activities, including monitoring implementation of approved programs. The USEPA works cooperatively with the states and tribes to achieve effective enforcement and environmental compliance, and continues to support approved state programs through grant funding and sharing of work.

Major environmental laws administered by OEPA, USEPA, or a combination of both, include:[1]

- **National Environmental Policy Act of 1969 –** This applies specifically to the federal government and requires that all branches of government give proper consideration to the environment prior to undertaking major federal action;
- **Clean Air Act of 1970, amended 1977 –** This generally established national air quality standards and requires compliance from all states in accordance with these standards;
- **Clean Water Act of 1972, amended 1977 and 1987 –** This generally established national water quality standards and requires compliance from all states in accordance with these standards; and
- **Safe Drinking Water Act of 1974, amended 1986 and 1996 –** This generally established national health-based standards for drinking water to protect against contaminants in public drinking water systems and requires compliance from all states in accordance with these standards.

[1] Descriptions are intended to be cursory in nature. The reader is encouraged to refer directly to the law for a more in-depth understanding of it.

Staffing and Budgetary Resources

OEPA has a total of 1,143 employees that carry out day-to-day operations.[2] This includes 1,081 full-time and part-time permanent staff and an additional 62 full-time and part-time temporary and intermittent employees.

Total operating expenditures were $169.30 million in FY 2011-12 and $169.41 million in FY 2012-13. OEPA was appropriated $202.65 million for FY 2013-14 and $205.76 for FY 2014-15. The result is a net increase of $69.70 million, or 20.6 percent, over the two biennia.

Table IV-1 shows OEPA's total appropriations by fund group for the FY 2013-15 biennium.

Table IV-1: OEPA Appropriations by Fund Group

Fund Group	FY 2013-14	FY 2014-15	Biennium Total	% of Total
General Revenue	$10,923,093	$10,923,093	$21,846,186	5.3%
General Services	$13,157,833	$13,233,709	$26,391,542	6.5%
State Special Revenue	$131,755,659	$135,299,122	$267,054,781	65.4%
Federal Special Revenue	$46,531,800	$46,016,675	$92,548,475	22.7%
Clean Ohio Conservation	$284,124	$284,124	$568,248	0.1%
Total	**$202,652,509**	**$205,756,723**	**$408,409,232**	**100.0%**

Source: Ohio Legislative Services Commission

Table IV-2 shows OEPA's total appropriations by funding category for the FY 2013-15 biennium.

Table IV-2: OEPA Appropriations by Funding Category

Funding Category	FY 2013-14	FY 2014-15	Biennium Total	% of Total
Air Pollution Control	$46,976,143	$47,630,564	$94,606,707	23.2%
Drinking and Ground Waters	$16,981,281	$17,375,996	$34,357,277	8.4%
Environmental Response and Revitalization	$21,310,725	$21,751,604	$43,062,329	10.5%
Materials and Waste Management	$36,786,316	$38,072,639	$74,858,955	18.3%
Surface Water Protection	$35,408,774	$35,178,774	$70,587,548	17.3%
Environmental Services	$3,706,746	$3,980,622	$7,687,368	1.9%
Environmental and Financial Assistance	$4,754,148	$5,036,148	$9,790,296	2.4%
Program Management	$23,438,307	$23,440,307	$46,878,614	11.5%
Environmental Education	$13,290,069	$13,290,069	$26,580,138	6.5%
Total	**$202,652,509**	**$205,756,723**	**$408,409,232**	**100.0%**

Source: Ohio Legislative Services Commission

See **IX. OEPA Funding Category Descriptions** for additional detail on OEPA funding categories shown in **Table IV-2**.

[2] OEPA's employee count is as reported by the Ohio Department of Administrative Services (DAS), as of May 31, 2015.

V. Summary of Recommendations and Impact

The following table shows performance audit recommendations by section and totals estimated financial implications, where applicable.

Table V-1: Summary of Section Recommendations and Impact [1]

Report Section	Recommendations	Annual Impact	One-Time Impact
Fleet Management	**R1.1, R1.2, & R1.3**	**$408,058**	**$64,600**
Laboratory Operations	**R2.1**	**$1,219,931**	**N/A**
Certified Professionals	**R3.1 & R3.2**	**$13,119**	**N/A**
Solid Waste Operator Certification	**R4.1**	**$150,460**	**$61,904**
Solid Waste Fee Collection Operations	**R5.1 & R5.2**	**$1,812,324**	**N/A**
Sub-Total Financial Implications		**$3,603,892**	**$126,504**
Total Combined Financial Implication			**$3,730,396**

Note: N/A indicates that no financial implication specific to the recommendation was calculated as part of the analysis.

[1] Where applicable, the impact shown has been reduced to take into account Agency expense incurred to implement the recommendation.

VI. Audit Results

The performance audit identified recommendations in the areas of:

- Fleet Management
- Laboratory Operations
- Certified Professionals
- Solid Waste Operator Certification
- Solid Waste Fee Collection Operations

Each scope area and report section includes recommendations that focus on performance measurement and management. This thematic focus evolved over time as progressively detailed work was performed to assess OEPA operations within each of the scope areas. Commonly, analysis identified that Agency leadership did not have ready access to critical management information. However, the data necessary to inform and support management decisions was often already captured, but not at a level of detail necessary for data-driven decision making. In other instances, data was being captured, but not aggregated in a way that provides internal and external visibility into operations at a meaningful level. Lastly, some data points were not being captured at all due to current system limitations or no systems at all. In all cases where these deficiencies were identified this report includes practical, implementable recommendations not only to address the identified deficiencies, but also to begin using the resulting data and information to improve management decision-making and Agency performance.

See **Section VIII: Abbreviated Terms and Acronyms** for a list of acronyms used throughout this report.

1. Fleet Management

Section Overview

The **Fleet Management** section is divided into three sub-sections of analysis, each analyzing a distinct element of fleet management and related practices including:

- **Utilization Data Collection:** The first sub-section analyzes practices used to collect and manage data on pool fleet utilization and highlights opportunities to improve data collection to more closely scrutinize fleet utilization within pool vehicles.
- **Mileage and Expense for Meetings:** The second sub-section analyzes the vehicle and personnel cost associated with travel for meetings and identifies opportunities to reduce cost and increase operational efficiencies by leveraging existing technologies.
- **Emergency Response Unit Assigned Vehicles:** The third sub-section analyzes the use of assigned vehicles within the Emergency Response Unit, assesses the impact that variation in district-by-district practices can have on operations, and identifies opportunities for standardization and increased efficiency.

Recommendations Overview

Recommendation 1.1: OEPA should optimize the collection of pool fleet utilization data to ensure that all significant utilization factors are accurately tracked. Once full utilization data is available, the Agency should reduce the size of the pool fleet to better match the actual level of pool fleet vehicle demand.

Financial Implication 1.1: If OEPA can confirm that the actual level of pool utilization is 146 vehicles or less, the Agency will still be able to reduce the total size of the pool fleet by 17 vehicles. These reductions could result in a first year savings of **$119,306** and ongoing savings of **$54,706**.

Recommendation 1.2: OEPA should leverage existing technologies such as video-conferencing to reduce the overall cost of travel and downtime for meetings. In doing so the Agency should develop policies and procedures that support the use of virtual meetings in lieu of face-to-face meetings, as appropriate, for the purpose of decreasing vehicle cost and increasing employee efficiency.

Financial Implication 1.2: OEPA could save **$345,115** annually by reducing pool fleet meeting travel expense by 24.0 percent. A portion of this savings, $119,201, will be in the form of actual reduced vehicle operating cost and a portion of this savings, $225,914, will be through redirected employee time and increased efficiency.

Recommendation 1.3: OEPA should implement formal policies and procedures for the allowable use of assigned vehicles. In doing so, the Agency should implement practices that increase the overall efficiency of the Emergency Response Unit vehicles such as modifying the commuter practices currently in place to model those used in the Southeast District. Doing so will allow for reduced commuter mileage and associated costs.

Financial Implication 1.3: OEPA can reduce Emergency Response Unit assigned vehicle commuter mileage by modeling practices already place within the Southeast District. Doing so will avoid 19,157 unnecessary commuter miles at a total cost of **$8,237** annually.

Issue for Further Study

Issues are sometimes identified by OPT that are not related to the objectives of the audit, but could yield economy and efficiency if examined in more detail. During the course of the audit, the ERU's organization and operations was identified as one such area. This section will recommend further study due to inconsistencies found in the organization and operation of the ERU.

Section Background

The Ohio Environmental Protection Agency (OEPA or the Agency), Office of Operations and Facilities (Operations) manages a fleet of 272 vehicles that are used to support various aspects of the Agency's statewide operations. OEPA's fleet management authority is "partially delegated" from the Ohio Department of Administrative Services (DAS) in accordance with Ohio Revised Code (ORC) § 125.832(G).[3]

Table 1-1 shows OEPA's count of vehicles and percent distribution of all vehicles by type as of fiscal year-to-date (FYTD) 2014-15.[4] Additionally, the cumulative percentage provides context for the concentration of the distribution of vehicles by type. This type of overview demonstrates that, although the Agency's fleet is relatively small, the majority of units are heavily concentrated within just a few vehicle types.

Table 1-1: OEPA Active Vehicles FYTD 2014-15

Vehicle Type	Count of Vehicles	% of Total Vehicles	Cumulative %
Passenger Sedans	123	45.2%	45.2%
1/2 Ton Pickup Trucks	74	27.2%	72.4%
3/4 Ton Pickup Trucks	29	10.7%	83.1%
Cargo Vans	24	8.8%	91.9%
SUVs	14	5.1%	98.9%
Passenger Vans	5	1.8%	93.8%
1 Ton Pickup Trucks	3	1.1%	100.0%
Total Fleet	**272**	**100.0%**	**N/A**

Source: Operations
Note 1: OEPA's count of vehicles is as of April 2015.
Note 2: Shading represents vehicle types that cumulatively account for more than 80.0 percent of the active fleet.

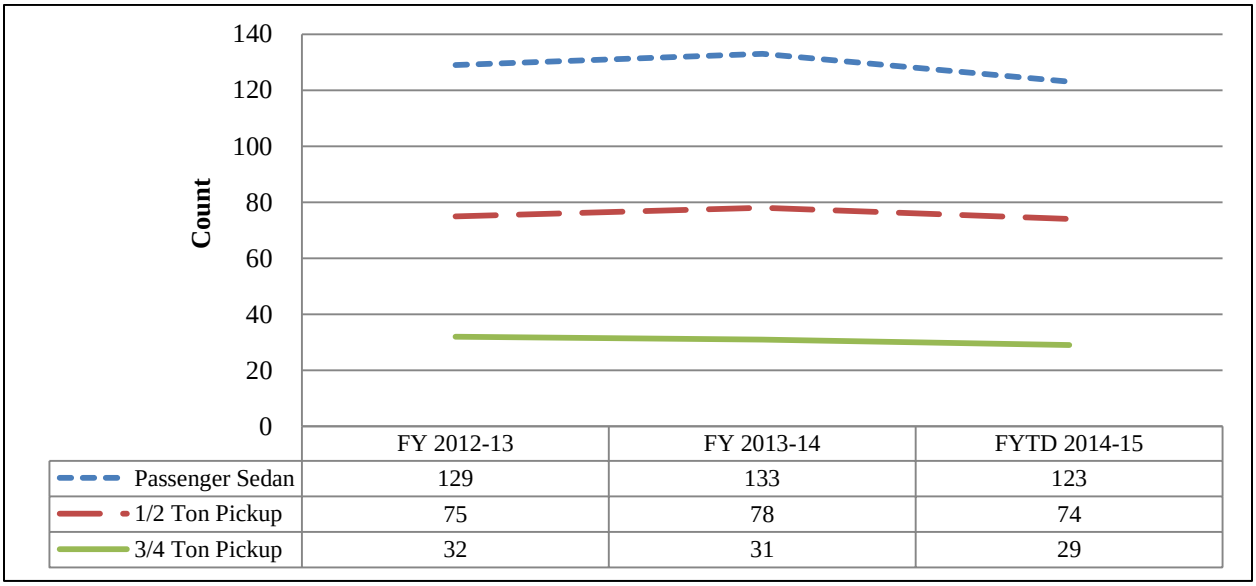
As shown in **Table 1-1**, the three most common vehicle types cumulatively account for 83.1 percent of the fleet. These three vehicle types include:

- Passenger Sedans – These are used primarily as pool vehicles at the district offices and as vehicles assigned to field staff, and account for 123 or 45.2 percent of the fleet;
- 1/2 Ton Pickup Trucks – These are primarily used for field sampling and inspection duties, primarily within the Division of Surface Waters and the Division of Air Pollution Control, and account for 74 or 27.2 percent of the fleet;
- 3/4 Ton Pickup Trucks – These are primarily used by the Division of Environmental Response and Remediation (DERR), Emergency Response Unit (ERU) and account for 29 or 10.7 percent of the fleet. (See **R1.3 Emergency Response Unit Assigned Vehicles** for additional detail.)

Chart 1-1 shows the total count for the three most common vehicle types from fiscal year (FY) FY 2012-13 to FYTD 2014-15.

[3] OEPA operates under partially delegated authority because the Agency does not have a certified fleet manager. As such Operations manages the fleet with oversight from DAS, Office of Fleet Management.
[4] OEPA's Count of vehicles is as of April 2015.

Chart 1-1: Common Vehicles FY 2012-13 to FYTD 2014-15



	FY 2012-13	FY 2013-14	FYTD 2014-15
Passenger Sedan	129	133	123
1/2 Ton Pickup	75	78	74
3/4 Ton Pickup	32	31	29

Source: Operations

As shown in **Chart 1-1**, the inventory of the most common vehicle types has declined slightly from FY 2012-13 to FYTD 2014-15, which is due largely to normal fluctuations from lag time between old vehicles being sent to salvage and newer vehicles being ordered and brought into the active fleet. Specifically, from FY 2012-13 to FYTD 2014-15, the inventory of passenger sedans decreased by six units, or 5.0 percent; 1/2 ton pickup trucks decreased by 1 unit, or 1.3 percent; and 3/4 ton pickup trucks decreased by 3 units, or 9.3 percent. It should be noted that the relative percentage of fluctuation for 3/4 ton pickups is amplified by the small number of units in inventory. In total, **Chart 1-1** shows that OEPA's fleet, as indicated by these key vehicle types, has remained relatively stable over time with slight overall decreases in total vehicle units.

The **Fleet Management** section is divided into three sub-sections of analysis, each analyzing a distinct element of fleet management and related practices including:

- **Utilization Data Collection:** The first sub-section analyzes practices used to collect and manage data on pool fleet utilization and highlights opportunities to improve data collection to more closely scrutinize fleet utilization within pool vehicles.
- **Mileage and Expense for Meetings:** The second sub-section analyzes the vehicle and personnel cost associated with travel for meetings and identifies opportunities to reduce cost and increase operational efficiencies by leveraging existing technologies.
- **Emergency Response Unit Assigned Vehicles:** The third sub-section analyzes the use of assigned vehicles within the Emergency Response Unit, assesses the impact that variation in district-by-district practices can have on operations, and identifies opportunities for standardization and increased efficiency.

R1.1 Utilization Data Collection

Background

OEPA operates a fleet of 163 passenger pool vehicles (pool vehicles include passenger sedans, 1/2 ton pickup trucks, passenger vans, and SUVs) located in Columbus, Ohio and at each of the other four OEPA district offices. OEPA personnel at any district office can reserve a vehicle using an online reservation system. The reservation system records traveler name, date of trip, number of travelers, number of days the vehicle is needed, destination, miles traveled, and cost of the trip.

Methodology

This sub-section, **Utilization Data Collection**, seeks to analyze utilization of OEPA's pool vehicle fleet; specifically the supply of pool vehicles in relation to the demand for those vehicles. During the planning and scoping phase of the performance audit, OEPA leadership identified this as a possible area that an objective analysis could identify opportunities for improved efficiency.

Analysis focused on comparisons between total vehicle supply and demand for the last full year of data available, calendar year (CY) 2014. As this analysis focuses solely on utilization of the pool fleet, all data was gathered from the Agency's pool vehicle online reservation system. Where necessary, OEPA and Operations staff provided additional testimonial evidence to explain the online reservation system as well as to supplement the understanding of day-to-day operations of the pool fleet.

During the course of the audit, certain gaps in pool fleet utilization data were identified and discussed with OEPA and Operations leadership. Specifically, the online reservation system does not account for the Agency practice of allowing travelers to take vehicles home on the afternoon before an extended trip or to return a vehicle by mid-morning after an extended trip. This practice increases efficiency by limiting employee time spent traveling to the pool location just to pick up a vehicle. However, by not collecting this additional utilization data, the online reservation system likely understates a portion of the actual utilization that occurs. Operations leadership estimated that it was reasonable to assume an additional 50.0 percent utilization factor, in addition to baseline utilization already tracked in the system, to account for early pick-ups and late check-ins. Furthermore, the online reservation system also does not currently track vehicle downtime due to maintenance or repair. Operations staff identified that when a pool vehicle is unavailable, the next available vehicle is used instead. Although Operations staff has visibility into this unavailability, this is not systemically tracked. To account for likely maintenance and repair downtime, this analysis uses a leading practice of 5.0 percent. This target is used by the City of Milwaukee, Wisconsin in managing its light vehicle fleet (e.g., passenger cars, 1/2 and 3/4 ton pickup trucks, SUVs, etc.). In all places where utilization is shown, the baseline rates are increased by a factor of 55.0 percent.

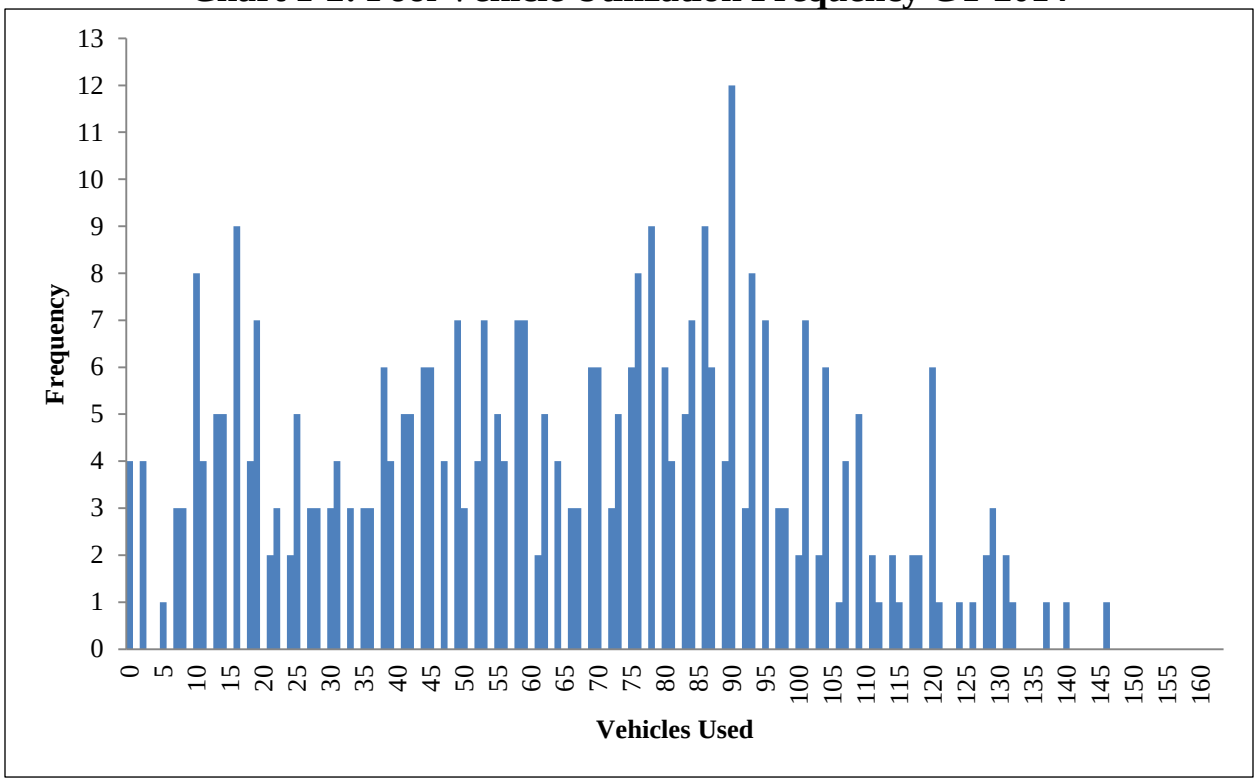
The analysis first focuses on quantifying pool vehicle utilization based on the total number of vehicles used and the frequency of days on which that number was used across CY 2014. The second analysis is pool vehicle use by month to identify seasonal fluctuations and peaks within

the year. Finally, the analysis quantifies several estimates of pool vehicle peak demand and assesses areas where data collection improvements are necessary to fully pinpoint and manage the size of the pool fleet supply to efficiently meet demand.

Analysis

Chart 1-2 shows the frequency of vehicle utilization for CY 2014. This provides an overview of the frequency (i.e., the total number of days) that a particular count of pool fleet vehicles was used and helps to illustrate both common and peak demand.

Chart 1-2: Pool Vehicle Utilization Frequency CY 2014

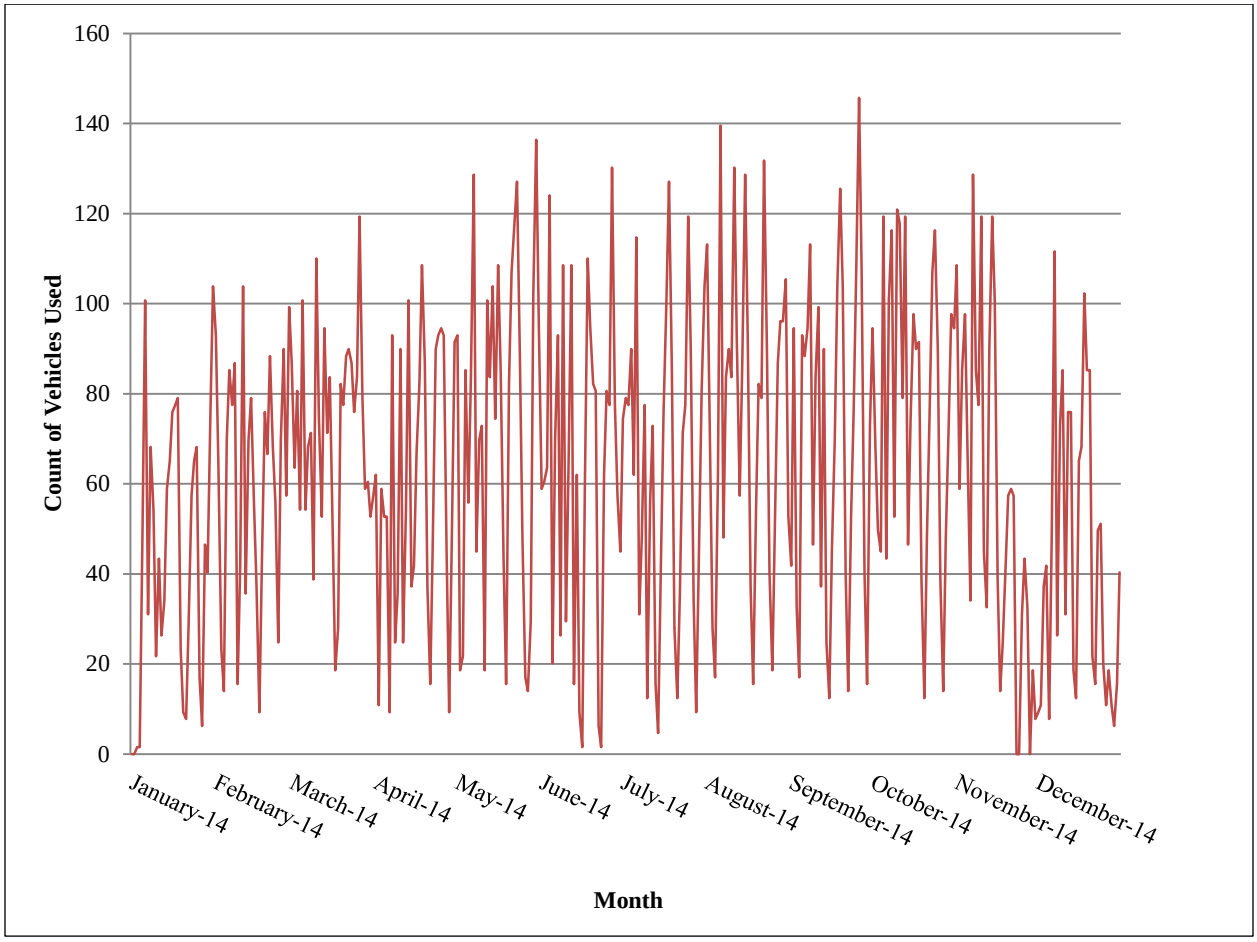


Source: Operations
Note: Utilization figures are factored at 155.0 percent of the baseline to account for known gaps in utilization data.

As shown in **Chart 1-2**, the most common number of vehicles used on a single day was 90, or 55.2 percent of the total pool. This demand occurred 12 times in CY 2014. The maximum number of vehicles used on a single day was 146, or 89.6 percent of the fleet, which occurred only once. This chart suggests that, even with a 55.0 percent increase in baseline utilization, the current supply of vehicles significantly exceeds current vehicle demand. Overall, this chart demonstrates that, absent a system to precisely measure demand for pool fleet vehicles, the Agency runs the risk of operating a fleet which is significantly larger than is necessary to meet actual demand.

Chart 1-3 shows vehicle demand throughout CY 2014. This chart provides additional context to the analysis presented in **Chart 1-2** by showing how vehicle demand fluctuates throughout the year.

Chart 1-3: Pool Vehicle Demand Fluctuations CY 2014



Source: Operations
Note: Utilization figures are factored at 155.0 percent of the baseline to account for known gaps in utilization data.

As shown in **Chart 1-3**, demand ranges from a low of 0 vehicles to 146 vehicles, but the demand is somewhat higher from May to October and then somewhat lower from November to April. Regardless, the same number of unused vehicles previously identified is still present.

Table 1-2 shows the current pool fleet and the potential oversupply of vehicles taking into account actual baseline utilization data, and then presents adjustments for both the 50.0 percent and cumulative 55.0 percent utilization scenarios.

Table 1-2: Potential Underutilized Vehicle Reduction

Current Pool Vehicle Inventory	**163**		
	Baseline Utilization	**Baseline + 50.0%** [1]	**Baseline + 55.0%** [2]
Maximum Utilization	**94**	**141**	**146**
Average Utilization	41	61	63
Median Utilization	42	63	65
Potential Vehicle Reduction	**69**	**22**	**17**

Source: Operations

Note: All potential vehicle reductions are conservatively calculated based on the maximum utilization occurrence.

[1] A 50.0 percent supplemental utilization factor was added to the baseline utilization as an estimated accounting for early pickups (i.e., the vehicle is picked up the evening before the scheduled use day) and late returns (i.e., the vehicle is returned the morning after the scheduled use day).

[2] An additional 5.0 percent supplemental utilization factor, cumulative 55.0%, was added to the baseline utilization to account for expected downtime due to periodic maintenance and repair.

As shown in **Table 1-2**, the unadjusted maximum number of vehicles used on a single day was 94, or 57.7 percent of the fleet; and the fully adjusted (i.e., Baseline + 55.0%) maximum number of vehicles used on a single day was 146, or 89.6 percent. Though both utilization assessments identify potentially excess, underutilized vehicles, the scope of the underutilization ranges from 17 to 69 vehicles; 10.4 to 42.3 percent of all pool vehicles, respectively. This wide variance in estimated underutilization suggests that an improved process for data collection could have benefits in terms of helping match vehicle supply to vehicle demand.

One possible solution for the issues demonstrated in **Table 1-2** is to modify the existing reservation system to collect data on the date and time a vehicle is checked-in and checked-out. Furthermore, the reservation system also does not track vehicle downtime. The reason the existing system does not collect specific data on vehicle check-ins, check-outs, and downtime is that it was not designed with these capabilities in mind. The reservation system is optimized to capture the full cost of vehicle operations in order to bill the cost back to the pool fleet users, thus covering the cost of operating the pool fleet. Regardless, the reservation system is a good source of information in its current form. Operations leadership and staff are working with OEPA's information technology personnel to make modifications to the reservation system that will allow it to collect more accurate utilization data.

Table 1-3 shows the potential financial impact of implementing the most conservative adjustment to the pool fleet size to meet the maximum estimated daily demand.

Table 1-3: Financial Implication of Fleet Reduction

Reduction Type	Amount
Vehicles Reduced	17
Annual Cost of Sedan Ownership [1]	$3,218
Ongoing Savings	**$54,706**
Reduction Type	**Amount**
Vehicles Reduced	17
Salvage Value [2]	$3,800
Additional First Year Financial Savings	**$64,600**
First Year Financial Savings	**$119,306**

Source: Operations and National Auto Dealers Association (NADA)
[1] Based on $0.14 per mile in maintenance and operating costs and $0.13 per mile in depreciation expenses.
[2] Based on the NADA average trade-in value for a passenger sedan with 96,000 miles.

Table 1-3 assumes that through improved utilization data collection, the Agency will verify that true pool fleet demand is actually far less than the 163 vehicles currently being supplied. Confirming this over-supply of vehicles (i.e., even a conservative reduction of 17 vehicles) would have a significant financial impact. In total, moving from a 163 vehicle fleet to a 146 vehicle pool fleet will result in a combination of revenue from vehicle salvage and reduced annual operating expense. The net result is a first year savings of **$119,306**, and an ongoing annual savings of **$54,706**. It is important to note that a reduction of this magnitude, though feasible, may be most efficiently implemented incrementally as vehicles are cycled out of the fleet. However, the extent to which the Agency chooses to aggressively pursue a reduction (i.e., immediately or planned over a period of time) is a matter of management implementation discretion.

Conclusion

Lack of complete pool fleet utilization data makes it difficult to precisely estimate the actual demand for vehicles. However, preliminary estimates identify that the pool fleet may be significantly underutilized. Gathering more precise data on pool fleet utilization will help OEPA leadership accurately adjust the supply of pool vehicles to match the actual demand and business needs of the Agency.

Recommendation 1.1: OEPA should optimize the collection of pool fleet utilization data to ensure that all significant utilization factors are accurately tracked. Once full utilization data is available, the Agency should reduce the size of the pool fleet to better match the actual level of pool fleet vehicle demand.

Financial Implication 1.1: If OEPA can confirm that the actual level of pool utilization is 146 vehicles or less, the Agency will still be able to reduce the total size of the pool fleet by 17 vehicles. These reductions could result in a first year savings of **$119,306** and ongoing savings of **$54,706**.

Additional Consideration

In addition to improvements to the existing online reservation system, a telematics system could also be beneficial in the collection of utilization data.[5] The cities of Dublin, Ohio and Columbus, Ohio, each use a GPS telematics system that collects several types of vehicle data, including;

- Key on/key off;
- Vehicle location;
- Vehicle speed;
- Vehicle miles per gallon (MPG); and
- Vehicle idle time.

The type of data collected through telematics could allow for a more precise measure of the exact number of vehicles needed on any given day. Over time, this additional detail would help the Agency gain a better understanding of the full demand for pool vehicles. In addition to data needed to measure utilization, the Arkansas State Highway and Transportation Department used telematics to reduce the costs of vehicle maintenance and operations by closely monitoring vehicle utilization patterns and idle time. The biggest gains were realized in the reduction of gasoline purchases; an observed reduction of 14.7 percent or nearly $1.0 million per year.

[5] Telematics, which encompasses a combination of vehicle-based computer and wireless communications technologies, is inclusive of a global positioning system (GPS) component. Telematics capabilities extend beyond location tracking and include the ability to monitor vehicle systems such as engine, seat belts, and air bags. In short, telematics is one way to make critical data points visible and readily available, typically through automated dashboards, reports, and systems interfaces, to fleet managers.

R1.2 Mileage and Expense for Meetings

Background

OEPA operates a fleet of 163 passenger pool vehicles (i.e., the "pool fleet").[6] The pool fleet is administered by the Office of Operations and Facilities (Operations), based out of the Agency's Central Office in Columbus, Ohio. Pool vehicles are located at each of the Agency's five regional offices, including Columbus. Pool vehicles are available to OEPA personnel that require vehicles for business travel on a limited-term basis rather than for permanent assignments.[7] The presence of both regional offices and a statewide network of responsibilities results in a frequent need to travel; in turn resulting in a significant amount of pool fleet mileage and expense.

Table 1-4 shows total pool fleet trips, mileage, and average miles per trip for the last four complete years, CY 2011 to CY 2014, as well as the four-year average. This type of overview helps to identify whether or not the pool fleet has a predictable level of annual demand and whether or not that demand is increasing, decreasing, or remaining constant from year to year.

Table 1-4: Pool Fleet Utilization Overview CY 2011 to CY 2014

Total Pool Fleet	CY 2011	CY 2012	CY 2013	CY 2014	Four-Year Avg.
Total Trips	10,652	10,548	10,389	10,729	10,580
Total Miles	2,012,623	2,029,519	1,969,110	1,965,609	1,994,215
Avg. Miles per Trip	188.9	192.4	189.5	183.2	188.5

Source: OEPA, Operations

As shown in **Table 1-4**, between CY 2011 and CY 2014 OEPA's total number of pool trips remained relatively constant; from a low of 10,389 trips in CY 2013 to a high of 10,729 in CY 2014. Further, total pool fleet mileage also remained relatively constant; from a low of 1,965,609 in CY 2014 to a high of 2,029,519 in CY 2012. Finally, average miles per pool trip also remained stable; from a low of 183.2 miles per trip in CY 2014 to a high of 192.4 in CY 2012.

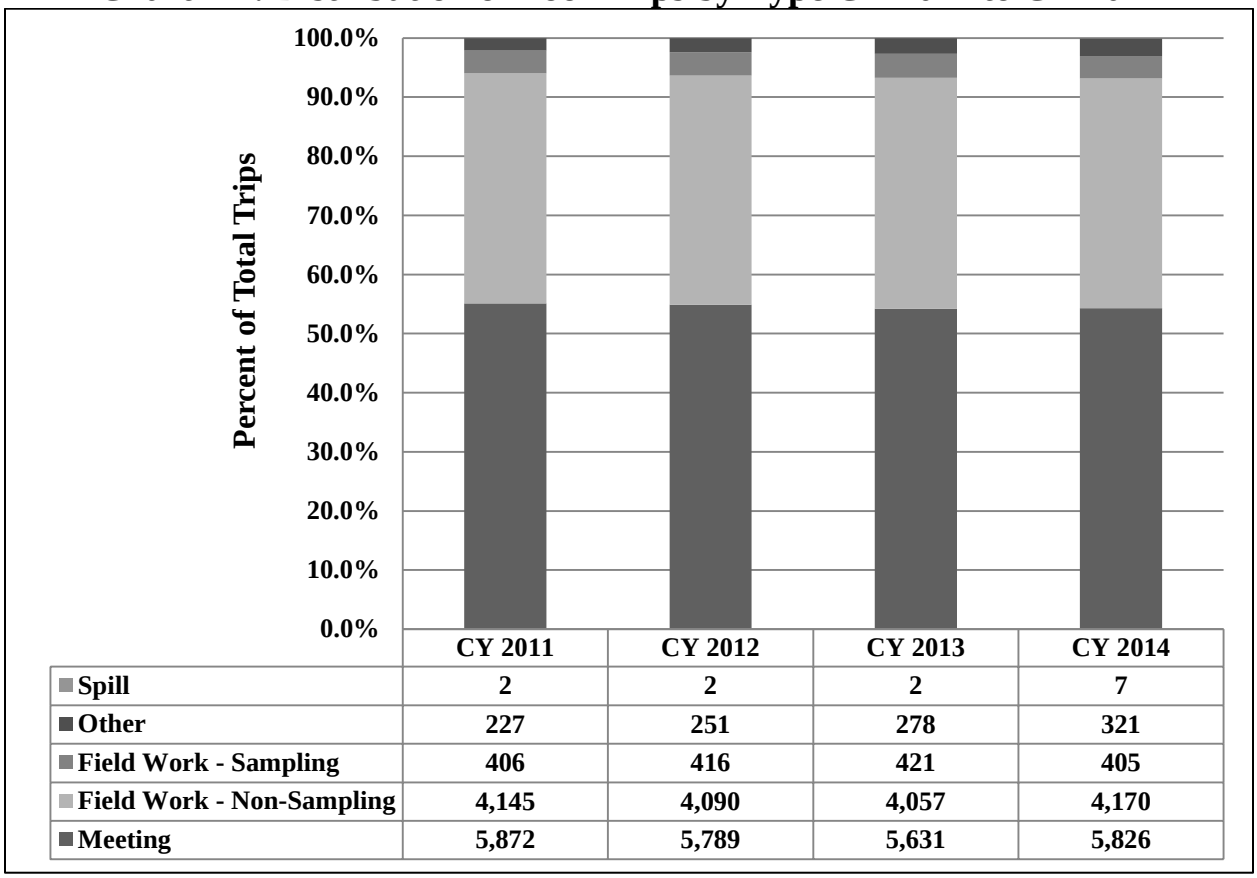
OEPA pool trips are distributed across five distinct categories including:

- **Meeting –** Travel between district offices as well as travel to meetings with representatives from other government agencies and/or stakeholders.
- **Field Work - Non-Sampling** – Travel to a work site, often for inspections.
- **Field Work - Sampling** – Travel for the collection of water, air, or soil samples for testing.
- **Spill –** Travel to provide technical assistance or oversight for spill cleanup and mitigation (see **R1.3 Emergency Response Unit Assigned Vehicles** for additional detail).
- **Other –** Travel for any purpose other than previously defined.

[6] Although the pool fleet is a relatively consistent total number of vehicles there are fluctuations at any given time due to the need to both cycle in new and salvage old vehicles. This snapshot of the pool fleet is as of June 2015.
[7] Employees that travel on a daily basis may be assigned a vehicle at the Agency's discretion.

Chart 1-4 shows the number and percent distribution of pool trips by type for the last four complete years, CY 2011 to CY 2014. Similarly, **Chart 1-5** shows the total mileage and percent distribution of mileage for pool trips by type for the last four complete years, CY 2011 to CY 2014. Both overviews provide context on how the pool fleet is being used as well as allowing for high-level identification of trends, if applicable.

Chart 1-4: Distribution of Pool Trips by Type CY 2011 to CY 2014

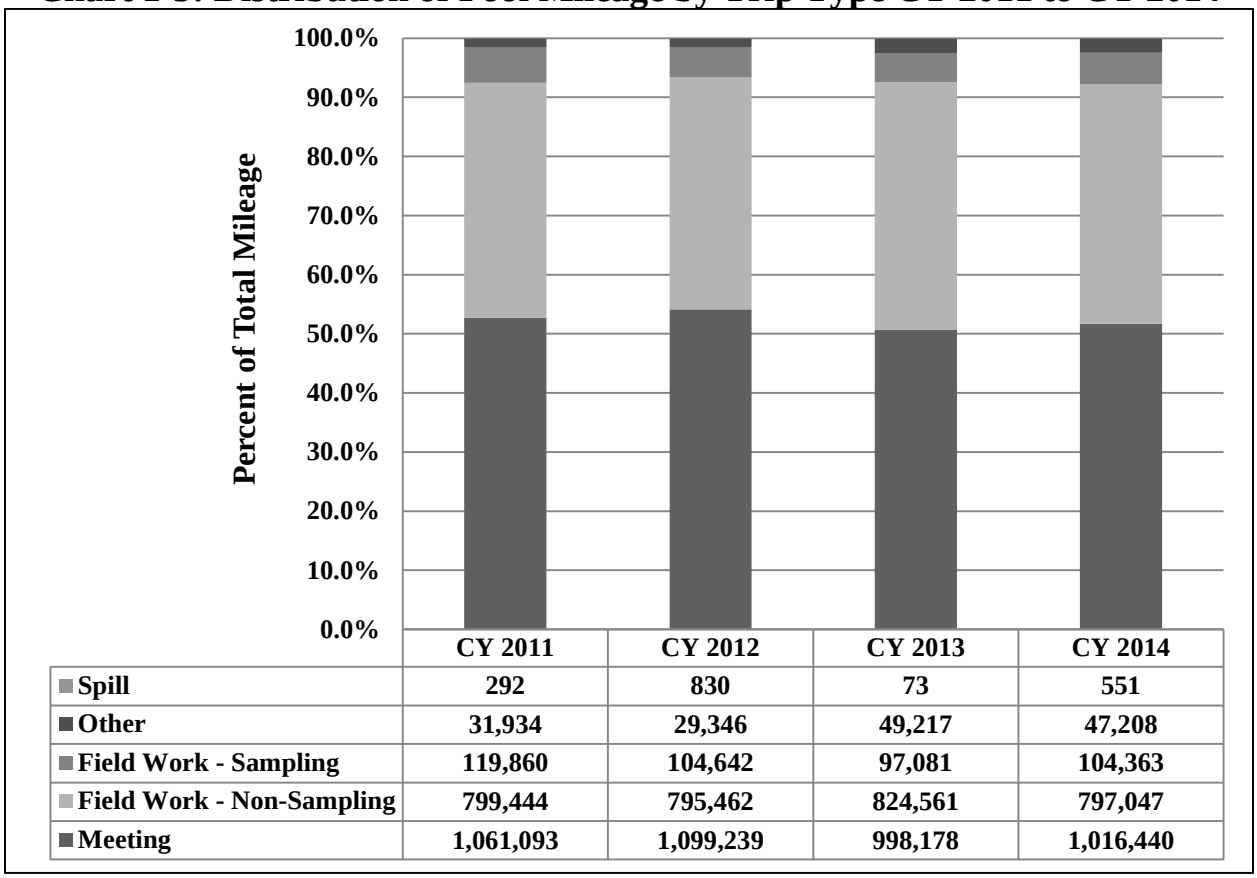


	CY 2011	CY 2012	CY 2013	CY 2014
Spill	2	2	2	7
Other	227	251	278	321
Field Work - Sampling	406	416	421	405
Field Work - Non-Sampling	4,145	4,090	4,057	4,170
Meeting	5,872	5,789	5,631	5,826

Source: OEPA, Operations
Note: Spill trips average less than 0.1 percent of total trips annually. As such, spill trips are visually omitted from the percent of total trips distribution shown.

As shown in **Chart 1-4**, two types of pool vehicle trips consistently account for the significant majority of total trips; meeting, an average of 54.6 percent annually, and field work – non-sampling, an average of 38.9 percent annually. Collectively, these two trip types account for an average of 93.5 percent of all annual pool fleet trips.

Chart 1-5: Distribution of Pool Mileage by Trip Type CY 2011 to CY 2014



	CY 2011	CY 2012	CY 2013	CY 2014
Spill	292	830	73	551
Other	31,934	29,346	49,217	47,208
Field Work - Sampling	119,860	104,642	97,081	104,363
Field Work - Non-Sampling	799,444	795,462	824,561	797,047
Meeting	1,061,093	1,099,239	998,178	1,016,440

Source: OEPA, Operations
Note: Spill mileage averages less than 0.1 percent of total mileage annually. As such, spill mileage is visually omitted from the percent of total mileage distribution shown.

As shown in **Chart 1-5**, meeting and field work – non-sampling trips again consistently account for the majority of total mileage. Specifically for meeting, an average of 52.3 percent annually and for field work – non-sampling, an average of 40.3 percent of total trips annually. Collectively, these two trip types account for an average of 92.6 percent of all annual pool fleet trips.

Over the last four calendar years, meeting travel, in terms of both pool fleet trips and mileage, consistently accounts for more than 50.0 percent of all pool fleet use. This suggests that there may be opportunities for improved efficiency. Although stakeholder meetings and meetings with other governmental entities may be difficult to reduce while maintaining an appropriate level of customer service, district-to-district or other OEPA-internal meetings may offer an opportunity. For example, through close scrutiny the Agency may be able to identify unnecessary meetings; however, at minimum, the agency may be able to leverage available resources and/or technologies to lessen the impact of meetings without significantly altering current expectations.

Methodology

This sub-section, **Mileage and Expense for Meetings**, seeks to quantify the full cost of meetings and determine if there could be options to reduce those costs. This scope area was selected after Agency leadership expressed an interest in learning more about the potential to improve the efficiency of the passenger pool fleet. The specific focus on meetings was determined because meetings are the most common type of pool fleet travel (see **Chart 1-4** above), account for the most total miles (see **Chart 1-5** above), and are the most expensive type of travel (see **Table 1-5** below). More specifically, the focus of this analysis is on opportunities to reduce the travel cost and employee cost (e.g., downtime and opportunity cost) associated with travel for meetings.

Data was drawn from Agency pool fleet trip reports from CY 2011 to CY 2014. Pool trips are recorded in an online database that is maintained by Operations. Trip reports include the following information:

- Vehicle ID number;
- Name of the person reserving the vehicle;
- Purpose of the trip;
- Destination,
- Date of trip;
- Miles traveled; and
- Calculated trip cost.

Trip cost is calculated by Operations on a per mile basis. This internal service rate is charged back to each division or operating unit that uses the pool vehicles and is meant to cover the cost of fuel, maintenance, depreciation, and overhead. Between CY 2011 and CY 2014 the average cost per mile (CPM) was $0.49 and the average vehicle cost per trip was $92.36.

To quantify the full cost of travel, a statistically valid, random sample of trips was selected from CY 2011 to CY 2014 trip reports.[8] Using the mileage and destination reported for each trip, a trip time was calculated based on the shortest route. This analysis resulted in a calculation of an average ratio of 1.08 minutes per mile. Travel time was extrapolated across all trips to allow for a calculation of total travel minutes for each trip.

To calculate the personnel cost associated with meeting trips, traveler names from trip reports were matched against OEPA's payroll from the Ohio Administrative Knowledge System (OAKS). Travel time was coupled with payroll cost to calculate an average payroll cost per minute traveled, including benefits. To account for the time required to pick-up and drop-off the vehicles, OPT and Operations staff walked through the process and calculated an additional 20 minutes per trip; this additional time was also quantified using actual payroll cost including benefits.

The analysis first quantifies the total cost of pool vehicle use by type. The analysis then identifies how other governmental entities have used video-conferencing technology to reduce the cost

[8] The total population of trip reports within the time period reviewed was 42,318. Based the total population of trip reports and a 95.0 percent confidence interval, a sample of 96 random reports was reviewed in detail.

associated with travel. Finally, the analysis calculates the potential impact associated with OEPA being able to achieve similar results.

Analysis

Table 1-5 shows meeting-specific trips, mileage, vehicle expense, and personnel expense for the last four complete years, CY 2011 to CY 2014, as well as the four-year average. This demonstrates not only the significant vehicle operating expense that is incurred for travel to and from meetings, but also the significant personnel expense incurred in terms of downtime, lost productivity, and opportunity cost. It is important to note that the quantification of personnel expense is only for checking the vehicle in and out and traveling to and from the meeting; all actual meeting time has been excluded from this analysis.

Table 1-5: Meeting Expense Detail CY 2011 to CY 2014

Meeting Detail	CY 2011	CY 2012	CY 2013	CY 2014	Four-Year Avg.
Meeting Trips	5,872	5,789	5,631	5,826	5,780
Meeting Miles	1,061,093	1,099,239	998,178	1,016,440	1,043,738
Meeting Miles per Trip	180.7	189.9	177.3	174.5	180.6
Vehicle Cost of Meeting Travel	**$439,094**	**$454,730**	**$430,752**	**$662,099**	**$496,669**
• Vehicle % of Total Cost	31.2%	31.3%	32.6%	42.2%	34.5%
Personnel Cost of Meeting Travel	**$969,767**	**$996,538**	**$892,294**	**$906,629**	**$941,307**
• Personnel % of Total Cost	68.8%	68.7%	67.4%	57.8%	65.5%
Total Cost of Meeting Travel	**$1,408,861**	**$1,451,268**	**$1,323,046**	**$1,568,728**	**$1,437,976**

Source: OEPA, Operations

As shown in **Table 1-5**, total cost for meeting travel for pool vehicles ranged from a low of $1,323,046 in CY 2013 to a high of $1,568,728 in CY 2014; and an average of $1,437,976 annually. Further, as a proportion of total cost, personnel cost consistently outpaces vehicle cost at an average of 65.5 percent and 34.5 percent, respectively. As such, although the opportunity to avoid unnecessary vehicle cost is important, the majority of the potential gains will come from avoiding the personnel cost (i.e., downtime, lost productivity, and opportunity cost) for meeting travel.[9]

[9] There is a potential for reduced meeting travel to have a significant impact on vehicle demand. This impact would be most significant when translated into the reduced demand to purchase and cycle in new pool vehicles. In short, if demand for pool vehicles decreases, the supply of pool vehicles also can commensurately decrease. See **R1.1 Utilization Data Collection** for additional information.

The federal government, in an effort to "[cut] waste in…spending and identifying opportunities to promote efficient and effective spending", has focused on minimizing the cost of services in order to provide "mission-critical functions in the most efficient, cost-effective way." Broadly, this effort has focused on travel, IT devices, fleet, and promotional items. Specific to travel, *Executive Order 13589* (November 2011) notes that, "Agency travel is important to the effective functioning of Government and certain activities can be performed only by traveling to a different location. However, to ensure efficient travel spending, agencies are encouraged to devise strategic alternatives to Government travel, including local or technological alternatives, such as teleconferencing and video-conferencing." Further, supplemental memorandum, *M-12-12, Promoting Efficient Spending to Support Agency Operations* (May 2012) specifically required each federal agency to spend 30.0 percent less on travel than the preceding year. Each agency was required to implement these changes by the end of 2013 and sustain them into the federal fiscal year 2013-14 budget request.

The Province of Ontario, Canada (Ontario or the Province) identified that "better use of technology and tighter rules on travel" resulted in a $30.0 million or 24.0 percent reduction in travel expense. Ontario credits the use of webcasting and videoconferencing technology in reducing the need for employee travel. Further, the Province notes that "tighter rules and mandatory training for all staff on those rules and alternatives to travel have also helped reduced travel expenses." Directly attributable to the use of technology such as video-conferencing and webcasting is a savings of 22,525 hours of employee time which otherwise would have been spent traveling.

Ohio state agencies are currently implementing Voice Over Internet Protocol (VOIP) and associated technologies, such as video-conferencing, as part of a statewide enterprise IT strategy. Although OEPA was an early adopter for VOIP, the Agency has yet to fully implement video-conferencing. However, during the course of this performance audit OEPA leadership and staff were actively working with leadership and staff from the Ohio Department of Administrative Services, Office of Information Technology to procure and implement a video-conferencing solution. As the technology is not fully in place, the Agency also does not have formal policies and procedure in place to educate and encourage or require staff to use video-conferencing in lieu of travel.

Table 1-6 shows the potential financial impact of reduced vehicle and personnel expense for meeting travel associated with aggressively adopting video-conferencing technologies and supportive policies and procedures. This analysis focuses on two distinct scenarios, the first (i.e., Scenarios A) is the federal government's mandated 30.0 percent reduction in travel expense, while the second (i.e., Scenario B) is Ontario's observed 24.0 percent reduction in travel expense. Both scenarios are applied to each vehicle, personnel, and total expense to provide a sense of the potential efficiency gains that can be realized within just OEPA's meeting travel expense.

Table 1-6: Financial Impact of Reduced Meeting Travel Cost

Year	Vehicle Cost [1]	Personnel Cost [2]	Total Cost
CY 2011	$439,094	$969,767	$1,408,861
CY 2012	$454,730	$996,538	$1,451,267
CY 2013	$430,752	$892,294	$1,323,046
CY 2014	$662,099	$906,629	$1,568,728
4--Year Average Costs	**$496,669**	**$941,307**	**$1,437,976**
Scenario A: Federal Travel Reduction	**Vehicle Cost**	**Personnel Cost**	**Total Cost Reduction**
• **30.0 Percent Reduction**	**($149,001)**	**($282,392)**	**($431,393)**
Scenario B: Ontario Travel Reduction	**Vehicle Cost**	**Personnel Cost**	**Total Cost Reduction**
• **24.0 Percent Reduction**	**($119,201)**	**($225,914)**	**($345,115)**

Source: OEPA, Operations; *Executive Order 13589* (November 2011); *M-12-12, Promoting Efficient Spending to Support Agency Operations* (May 2012); and Ontario

[1] This is the cost incurred by vehicles being driven to and from meetings in CY 2014 (see **Table 1-5**).

[2] Personnel cost, inclusive of benefits, is based on the actual individual compensation rate of the employee that reserved the vehicle. Each personnel cost was then applied, on a per-minute basis, to the calculated travel time for each trip to and from a meeting.

As shown in **Table 1-6**, OEPA could reduce its average annual meeting travel cost from between $345,115 and $431,393 based on modeling the Ontario and federal government travel expense reduction strategies, respectively. Although a reduction of up to 30.0 percent of travel may be achievable, the 24.0 percent reduction in travel has actually been achieved and documented. Further, the 24.0 percent reduction is a more conservative estimate of the potential benefit that OEPA could realize. Regardless, a 24.0 percent reduction in meeting travel cost would result in a $119,201 reduction in vehicle cost and a more efficient, effective use of $225,914 in employee time; a net gain of a total **$345,115** annually.

Achieving results similar to those experienced and measured by Ontario would require only marginal changes in the way the Agency's current meetings are conducted. For example, a 24.0 percent reduction in meeting travel expense could easily be achieved by just shifting 3 out of every 10 meetings to a video-conference with no actual reduction in meeting frequency or time. Ultimately, due to the relatively high cost of travel to and from meetings in the current state, a marginal decrease in meeting travel cost will have a significant financial impact.

Conclusion

Meetings are the single most common type of pool vehicle use in terms of the number of trips and the most significant type of pool vehicle use in terms of total miles. Furthermore, meeting travel incurs the highest cost in terms of vehicle and personnel cost. Closely scrutinizing the purpose and intended benefit of meetings as well as adopting leading practices, such as the use of videoconferencing, to cut down on meeting travel cost can allow the Agency to not only avoid unnecessary vehicle expense, but also improve employee productivity.

Recommendation 1.2: OEPA should leverage existing technologies such as video-conferencing to reduce the overall cost of travel and downtime for meetings. In doing so the Agency should develop policies and procedures that support the use of virtual meetings in lieu of face-to-face meetings, as appropriate, for the purpose of decreasing vehicle cost and increasing employee efficiency.

Financial Implication 1.2: OEPA could save **$345,115** annually by reducing pool fleet meeting travel expense by 24.0 percent. A portion of this savings, $119,201, will be in the form of actual reduced vehicle operating cost and a portion of this savings, $225,914, will be through redirected employee time and increased efficiency.

Additional Consideration

OEPA has not yet fully implemented video-conferencing technology. As such, the cost savings identified in this performance audit will not be fully realized until implementation is complete. However, in the meantime, the Agency can develop necessary policies and procedures regarding the efficient use of travel. It is likely that some financial gains will be realized through increased employee awareness during this period, but not to the extent possible after video-conferencing implementation.

R1.3 Emergency Response Unit Assigned Vehicles

Background

The mission of the Division of Environmental Response and Remediation (DERR) is to "[protect] human health and [improve] the quality of the environment for present and future generations through the prevention, identification, investigation, regulation and remediation of chemical and petroleum hazards in all environmental media." One way that DERR carries out its mission is through the Emergency Response Unit (ERU or the Unit). In accordance with ORC the ERU helps first responders address emergencies and pollution incidents.[10] The Unit does this primarily through its On-Scene Coordinators (OSC). OSCs are available to help first responders address environmental emergencies and pollution incidents, including chemical and petroleum spills. Common services provided by OSCs include:

- Providing technical assistance to first responders;
- Conducting site investigations or follow-ups;
- Documenting substances spilled and the extent of impact;
- Documenting steps taken by the "Responsible Party" to mitigate impact;[11] and
- Working with contractors to coordinate and verify the cleanup of pollutants.

The overarching goal of the ERU is to minimize the impact of spills and releases to the environment and makes sure they are properly cleaned up. Concerned citizens and first responders report 5,000 incidents annually to the ERU through the 24-hour emergency spill response hotline.

In order to provide timely coverage and response, as necessary, across the State, the ERU maintains a presence at each of OEPA's five district offices. Each district office has a semi-autonomous ERU presence and OSCs that are responsible for providing services within all counties in the district-specific coverage area.[12]

[10] Sections governing the ERU's role in response include ORC § 3704.03, 3734.20 to 3734.23, 3745.12, and 6111.03.

[11] OSCs do not respond in-person to every incident; however, when they do respond, the first step is to identify the Responsible Party (RP) and inform the RP of legal responsibilities. ORC § 3745.13 identifies a RP as "any person responsible for causing or allowing an unauthorized spill, release, or discharge of material into or upon the environment…that has caused contamination of the environment." The RP is liable for any costs of investigation, mitigation, minimization, abatement, or remediation of the environmental impact, in addition to the cleanup activities related to the spill.

[12] Although ERU districts operate out of the same district offices as the OEPA districts, the coverage areas (i.e., counties covered) of each ERU district vary from those of the general OEPA districts. As such, this sub-section uses the term ERU districts when referring to the Unit's organization and operations.

Table 1-7 shows the five ERU districts, district office locations, and number of counties in addition to OSC headcount and full-time employees (FTEs). This overview helps to establish an understanding of how the ERU is regionally organized. Although not shown it should be noted that each district office has a manager who oversees DERR staff including OSCs.

Table 1-7: ERU Districts and OSC Presence

ERU District	Office Location	Counties Served	OSC Headcount	OSC FTEs
Central or CD	Columbus	12	2	2.0
Northeast or NE [1]	Twinsburg	15	5	3.0
Northwest or NW	Bowling Green	22	2	2.0
Southeast or SE	Logan	23	3	3.0
Southwest or SW [2]	Dayton	16	3	2.3
Totals	**N/A**	**88**	**15**	**12.3**

Source: OEPA

Note: For the purposes of this analysis 1.0 FTE is defined as an employee who works 2,080 hours in a year.

[1] The Northeast District has five total OSC employees, one who is full-time, two who are 75.0 percent assigned to OSC duties, and two who are 25.0 percent assigned to OSC duties.

[2] The Southwest District has three total OSC employees, one who is full-time, one who is 80.0 percent assigned to OSC duties, and one who is 50.0 percent assigned to OSC duties.

As shown in **Table 1-7**, the number of counties served by each district varies. The Central District serves the smallest number of counties, 12, while the Southeast District serves the largest number of counties, 23. The number of OSCs in each district varies from two to five, with actual FTE's ranging from two to three in each district. Statewide, there are a total of 12.3 FTEs.

Table 1-8 shows square miles, lane miles, lane miles per square mile, population, and population per square mile within each ERU district. As the ERU is potentially responsible, at least in part, for any spill or release within the assigned district, each of these three quantitative factors can have an impact on the probability of a spill or release and may also influence the resources required to respond to a spill or release.

Table 1-8: ERU District Service Areas and Coverage

ERU District	Total Square Miles Covered	Total Lane Miles Covered	Lane Miles per Sq. Mile	Total Population Served	Population per Sq. Mile
Central	5,816	18,557	3.2	2,194,943	377.4
Northeast	7,108	30,342	4.3	3,974,021	559.1
Northwest	9,357	27,016	2.9	1,513,764	161.8
Southeast	11,401	27,094	2.4	1,013,139	88.9
Southwest	7,175	24,750	3.4	2,897,762	403.9

Source: OEPA, US Census Bureau, and Ohio Department of Transportation

As shown in **Table 1-8**, the Southeast District covers the most square miles while the Central District covers the fewest. However, the Northeast District covers the most roadway lane miles and densest network of roadways. Finally, the Northeast District also covers the largest total population as well as the densest population. Though the report does not seek to draw conclusions on these factors, they are an important consideration to understanding the mix of work performed by the ERU from district to district; especially when coupled with regionally specific factors such as concentration of industry. For Example, the Southeast District covers a large, rural territory with significant oil and gas development while the Northeast District covers a smaller, urban territory with significant industrial presence. The result is that OSCs in the Southeast District may receive fewer total calls, but will have to travel farther to respond in person while the Northeast District may receive relatively far more calls, but will travel shorter distances when responding.[13]

To carry out day-to-day responsibilities, all OSCs are assigned vehicles and a kit of tools and equipment.[14] The assigned vehicles are all four-wheel-drive, 3/4 ton pickup trucks and each is outfitted as a mobile office; including being outfitted with Ohio's Multi-Agency Radio Communication System (or MARCS as it is commonly known). In short, OSCs have the tools and equipment necessary to conduct almost all field work or office work at all times.

Methodology

This sub-section, **Emergency Response Unit Assigned Vehicles**, seeks to identify the fleet practices of the ERU and identify opportunities for greater fleet efficiency. This area of analysis was identified through initial discussion with OEPA leadership as the ERU represents a major user of a relatively unique group of Agency vehicles. Through additional detailed analysis, commuter mileage was identified as a specific area of focus for assessing the potential for more efficient practices.

OEPA, the Division, and the Unit provided current and historical baseline data including staffing and vehicle assignments, and vehicle operating information (e.g., mileage by trip purpose). Additional sources of data included the Ohio Administrative Knowledge System (OAKS) and monthly ERU district reports. Data used for analysis focused on the three most recent complete years available, calendar year (CY) 2012 to CY 2014. Where necessary, Division and Unit staff provided additional insight to identify standard processes for fleet management within the ERU.

Monthly mileage logs are used by OSCs at each district to capture mileage/trip category data. The mileage logs are then provided to Division leadership for aggregation, analysis, and reporting as necessary. Although all mileage logs were requested for CY 2012 to CY 2014, the Division was unable to provide complete documentation. As such, where gaps were present in the data, monthly averages of available data by division were used to pro-rate a total adjusted

[13] There are portions of the Southeast District which could take as much as 3 hours of driving time, one way, to reach from the District Office in Logan, Ohio. Though this is not typical it does help to illustrate the potential impact of a large rural district with relatively fewer major roadways.

[14] For example, the standard tool and equipment kit includes a variety of items such as, protective clothing, water and chemical testing supplies, sample collection supplies, hand tools, and sorbent booms and pads.

annual data set. These adjusted annual numbers are used in all analyses that reference total or average annual mileage.

Due to the nature of positions (see **Table 1-7** above) in the Northeast District, there is a significant amount of vehicle mileage that is accumulated for non-ERU assignments; an average of 18,910 total miles or 25.5 percent from CY 2012 to CY 2014. Other district mileage logs also reflect this category but to an insignificant degree. However, this mileage is reported as a broad category within the monthly mileage logs and no detail exists in the current data to differentiate exactly what trips are being accounted for. As such, to avoid overstating Northeast District OSC mileage associated with the ERU, all mileage in this category has been excluded from the analysis. This exclusion does not impact the conclusions reached as this mileage is insignificant to the other four districts. Specifically excluded mileage as a three-year average equates to, 423 total miles or 1.1 percent for the Central District; 518 total miles or 1.9 percent for the Northwest District; 1,126 total miles or 3.7 percent for the Southeast District; and 1,106 total miles or 2.6 percent for the Southwest District.

The analysis first examines mileage patterns, focusing on commuter mileage, by district. The analysis then identifies the differences in the operating practices of each district and how those operating practices impact vehicle usage. Finally, the analysis quantifies the financial impact of adjusting commuter practices across all districts, consistent with practices already employed by other districts.

Analysis

Commuter Mileage

OSCs are responsible for self-reporting vehicle mileage each month. Mileage is distributed across four standard categories, which include:

- **Spill Response –** These are miles that are directly attributed to spill response. These miles are billable to the RP as a cost incurred.
- **Meetings and Trainings –** These are miles spent traveling to meetings, trainings, and/or speaking engagements.
- **Commute –** These are miles spent traveling in the assigned vehicle directly to and from the on-call OSC's home and office.
- **Non-ERU Assignments –** These are miles associated with other OEPA programs that are not ERU related.

Table 1-9 shows total OSC mileage by district and by category for the last three complete years available, CY 2012 to CY 2014, as well as the three-year average. **Table 1-10** shows the same data, but as a percent distribution of total miles. Both overviews help to demonstrate variability in mileage by category and as a percent of total mileage from district to district.

Table 1-9: OSC Mileage Overview CY 2012 to CY 2014

CY 2012	CD	NE	NW	SE	SW	Totals by Type
Spill Response	7,149	29,878	8,681	11,044	7,686	64,438
Meetings & Trainings	1,619	7,059	4,169	1,693	17,375	31,915
Commute	14,508	5,943	7,559	4,142	16,143	48,295
Totals by District	**23,276**	**42,880**	**20,409**	**16,879**	**41,204**	**144,648**
CY 2013	**CD**	**NE**	**NW**	**SE**	**SW**	**Totals by Type**
Spill Response	16,400	56,162	13,731	22,138	7,242	115,673
Meetings & Trainings	4,231	14,659	7,934	4,526	17,589	48,939
Commute	29,284	7,813	14,395	5,650	23,760	80,902
Totals by District	**49,915**	**78,634**	**36,060**	**32,314**	**48,591**	**245,514**
CY 2014	**CD**	**NE**	**NW**	**SE**	**SW**	**Totals by Type**
Spill Response	19,425	53,804	10,569	34,908	7,479	126,185
Meetings & Trainings	3,084	10,662	7,054	5,978	25,298	52,076
Commute	37,006	7,904	12,511	8,837	19,057	85,315
Totals by District	**59,515**	**72,370**	**30,134**	**49,723**	**51,834**	**263,576**
Three-Year Avg.	**CD**	**NE**	**NW**	**SE**	**SW**	**Totals by Type**
Spill Response	14,325	46,615	10,994	22,697	7,469	102,100
Meetings & Trainings	2,978	10,793	6,386	4,066	20,087	44,310
Commute	26,933	7,220	11,488	6,210	19,653	71,504
Totals by District	**44,236**	**64,628**	**28,868**	**32,973**	**47,209**	**217,914**

Source: DERR and ERU
Note: Mileage for all districts and years has been adjusted to exclude non-ERU assignments mileage.

As shown in **Table 1-9**, average total mileage ranges from a high of 64,628 in the Northeast District to a low of 28,868 in the Northwest District. Specific to the category of commuter mileage, the Central District, on average, had the most total commuter miles with 26,933 annually, while the Southeast District, on average, had the fewest total commuter miles with 6,210 annually. **Table 1-9** also shows that, with few exceptions, for each of the three years analyzed, total OSC mileage has been trending upward across all districts.[15] Further, each district's CY 2014 total mileage exceeds the three-year average total mileage. This reaffirms that although the three-year average is instructive to understanding district-to-district differences, any specific conclusions should be drawn using CY 2014 data as it best represents the overall trend direction.

[15] Although mileage is trending upward from CY 2012 to CY 2014 there has been fluctuation. Specifically, the Northeast and Northwest Districts experienced a total mileage increase from CY 2012 to CY 2013, but total mileage then decreased from CY 2013 to CY 2014. However, in both cases, total mileage still remained significantly higher than CY 2012 levels; by 24,490 or 68.8 percent for the Northeast District and by 9,725 or 47.7 percent for the Northwest District.

Table 1-10: OSC Mileage Distribution CY 2012 to CY 2014

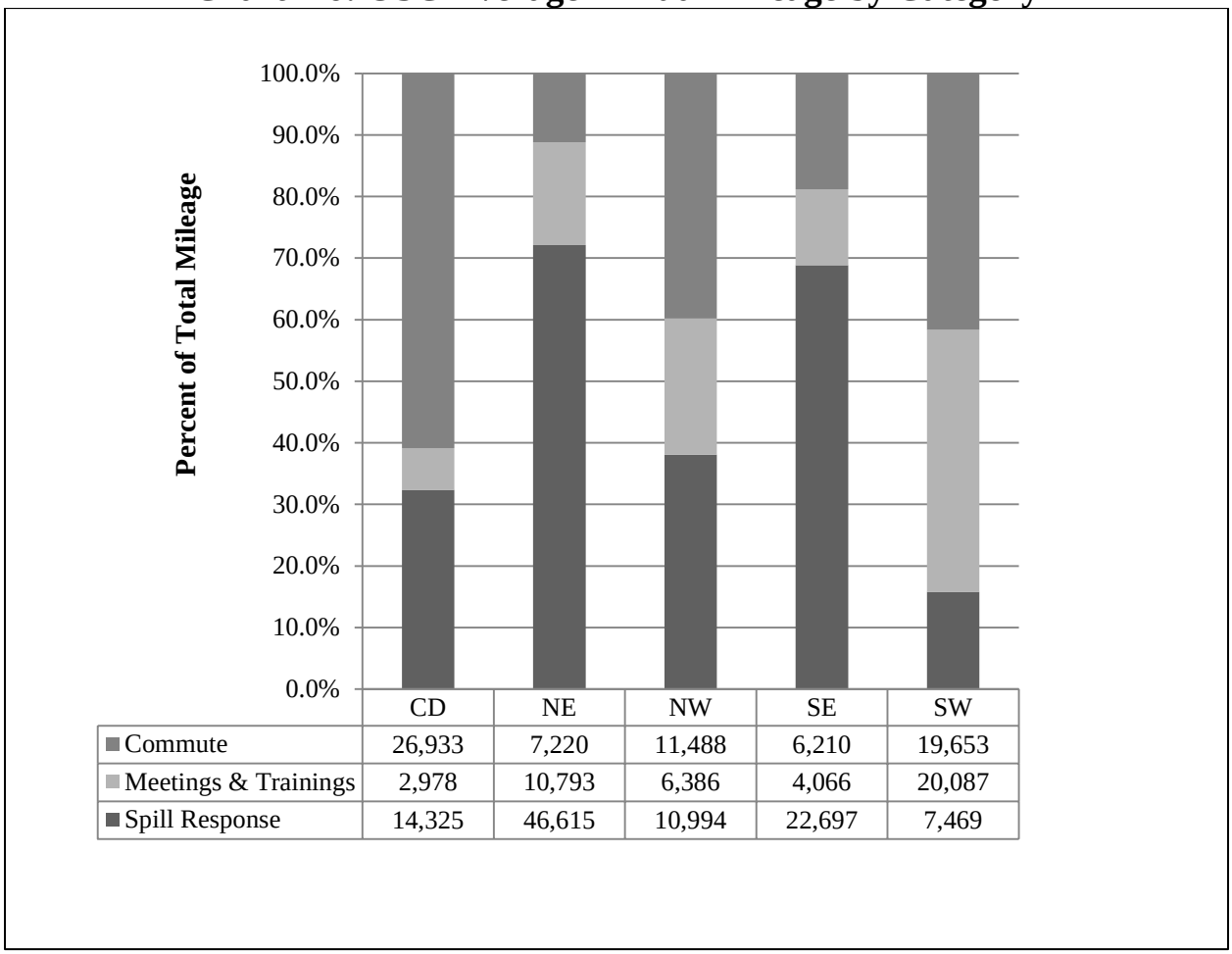
CY 2012	CD	NE	NW	SE	SW	Total % by Type
Spill Response	30.7%	69.8%	42.5%	65.4%	18.6%	44.5%
Meetings & Trainings	7.0%	16.5%	20.4%	10.1%	42.2%	22.1%
Commute	62.3%	13.9%	37.1%	24.5%	39.2%	33.4%
CY 2013	**CD**	**NE**	**NW**	**SE**	**SW**	**Total % by Type**
Spill Response	32.9%	71.5%	38.1%	68.5%	14.9%	47.1%
Meetings & Trainings	8.5%	18.6%	22.0%	14.0%	36.2%	19.9%
Commute	58.6%	9.9%	39.9%	17.5%	48.9%	33.0%
CY 2014	**CD**	**NE**	**NW**	**SE**	**SW**	**Total % by Type**
Spill Response	32.6%	74.4%	35.1%	70.2%	14.4%	47.8%
Meetings & Trainings	5.2%	14.7%	23.4%	12.0%	48.8%	19.8%
Commute	62.2%	10.9%	41.5%	17.8%	36.8%	32.4%
Three-Year Avg.	**CD**	**NE**	**NW**	**SE**	**SW**	**Total % by Type**
Spill Response	32.4%	72.1%	38.1%	68.8%	15.8%	46.9%
Meetings & Trainings	6.7%	16.7%	22.1%	12.4%	42.5%	20.3%
Commute	60.9%	11.2%	39.8%	18.8%	41.7%	32.8%

Source: DERR and ERU
Note: Mileage for all districts and years has been adjusted to exclude non-ERU assignments mileage.

As shown in **Table 1-10**, the average distribution of total mileage is weighted toward spill response at 46.9 percent, then commute at 32.8 percent, and finally meetings and trainings at 20.3 percent. However, the mix of these three categories varies by district. Specific to the commute percentage, as a three-year average, the Central District had the highest average percentage at 60.0 percent while the Northeast District had the lowest average percentage at 11.2 percent. Over the three-year period, the Central District always had the highest percentage of commuter miles while the Northeast District and the Southeast District, in that order, always had the lowest percentage of commuter miles.

Chart 1-6 shows three-year average OSC total mileage and percent distribution by district and category. This chart visually demonstrates the variability in mileage by category and as a percent of total mileage from district to district originally shown in **Table 1-9** and **Table 1-10**.

Chart 1-6: OSC Average Annual Mileage by Category



	CD	NE	NW	SE	SW
Commute	26,933	7,220	11,488	6,210	19,653
Meetings & Trainings	2,978	10,793	6,386	4,066	20,087
Spill Response	14,325	46,615	10,994	22,697	7,469

Source: DERR and ERU
Note: Mileage for all districts and years has been adjusted to exclude non-ERU assignment mileage.

As shown in **Chart 1-6**, when specifically evaluating commuter mileage, the Southeast District averaged the fewest total miles and the second lowest percentage distribution. Similarly, the Northeast District has the second fewest average total miles and the lowest percentage distribution. In contrast, the Central and Southwest Districts routinely incur the most commuter miles and the highest percentage distributions.

Table 1-11 shows the number of on-call OSCs, total commuter miles, and average commuter miles per on-call OSC for each district for CY 2014. For definitional purposes "on-call" refers to OSCs who may be called in after regular working hours to respond to a spill or discharge. As such, these are the only OSCs who are routinely allowed use of the assigned vehicles for commuting purposes. Although vehicles are assigned to all OSCs, those that are not on-call leave the assigned vehicles at the assigned district office and commute using their personal vehicles.

Table 1-11: Avg. Commuter Mileage per On-Call OSC CY 2014

ERU District	On-Call OSCs	Total Commuter Miles	Avg. Miles per On-Call OSC
Central	2	37,006	18,503
Northeast	3	7,904	2,635
Northwest	2	12,511	6,256
Southeast	2	8,837	4,419
Southwest	3	19,057	6,352

Source: OEPA
Note: Only one OSC per district is on-call at any given time. However, because on-call is a rotating duty there are multiple OSCs per district that participate in on-call status.

As shown in **Table 1-11**, average commuter miles per on-call OSC ranged from a low of 2,635 miles per year in the Northeast District, to a high of 18,503 miles in the Central District. Similar to preceding analyses, the Southeast District continued to incur the second fewest commuter miles per on-call OSC while the Southwest District continued to incur the second most commuter miles per on-call OSC. One important note is that when accounting for commuter miles per on-call OSC rather than just total commuter miles, the Southwest District's performance more closely aligns to the Northwest District rather than the Central District.

As commuter miles are, by definition, travel from home to office and vice-versa, a central factor is the average actual commute distance for each on-call OSC. The Central District has the longest average commute, at 43.5 miles (one-way). The Southwest District has the next longest average commute, at 33.8 miles, followed by the Southeast District at 32.5 miles, and the Northeast District at 23.8 miles. The District with the shortest average commute is the Northwest District at 21.5 miles.

It should be noted that these differences in commuter distance do not specifically align with or fully explain the total commuter miles recorded on the district-specific mileage logs and aggregated by DERR. For example, the Central District had an average commute of just 9.7 more miles each way when compared to the Southeast District, or 28.7 percent more; however the Central District accumulated 318.8 percent more commuter miles in total than the Southeast District. Additionally, while the Northwest District has the shortest average commute, the OSCs in that District accumulated the second highest total commuter miles and had one of the higher average commuter miles per on-call OSC.

Commuter Practices

Although the goals and overall structure of the ERU is consistent across all five districts, each district has developed and implemented different practices with regard to staffing, vehicle operation, and workload distribution. Currently, districts employ one of three distinct practices regarding assigned vehicle usage:

- **Practice 1:** OSCs take assigned vehicles home each night, and report back into the District Office each morning. This practice is used by the Central District and Northwest District.[16]
- **Practice 2:** OSCs take assigned vehicles home each night, but are not required to start the work day in the district office. Instead, OSCs check in by phone or radio, and travel directly to work locations. OSCs only come into/return to the district office if necessary. This practice is used by the Northeast District and the Southwest District.
- **Practice 3:** OSCs drive assigned vehicles home only when on-call. This means that only one ERU vehicle is used for commuter mileage each day. The remaining assigned ERU vehicles remain parked at the district office and the OSCs who are not on-call use personal vehicles to commute. This practice is used by the Southeast District Office.

Practice 3 offers the best overall mix of efficiency and oversight. Unlike Practice 2, OSCs check in daily at each regional office. As such, staff are available to perform ERU duties as well as to help out with other DERR or Unit administrative tasks during non-call downtime. Under this practice, personal vehicles are used to commute to and from the office, with the exception of a rotating on-call OSC. Furthermore, considering the staff members are capable of commuting daily to the district office, additional trucks can be accessed with only minimal delay.

Lack of formal policies and procedures has led to three distinct commuting practices at the district offices. The data shows that these differing practices have an impact on the number of commuter miles driven. By changing the assigned vehicle usage practices for the Central District, Northwest District, and Southwest District to mirror those of the Southeast District, these districts could see a reduction in cost associated with operating the vehicles for commuter usage.

[16] Central District OSCs also have "duty room" responsibilities. The duty room receives calls via the 24-hour spill hotline and staff working the duty room will also document Initial Pollution Incident Reports (i.e., a record of the spill or discharge incident that is prepared based on initial information reported).

Table 1-12 shows the annual savings that could be achieved by implementing a commuter practice modeled on the Southeast District in the Central District, Northwest District, and Southwest District.

Table 1-12: Financial Impact of Reduced Commuter Mileage

ERU District	Current Annual Commuter Miles	Potential Annual Commuter Miles [1]	Annual Mileage Difference	Estimated Annual Savings [2]
Central	37,006	21,750	15,256	$6,560
Northwest	12,511	10,750	1,761	$757
Southwest	19,057	16,917	2,140	$920
Total Annual Savings from Reduced Commuter Mileage				**$8,237**

Source: OEPA and NADA

Note: Mileage for all districts and years has been adjusted to exclude non-ERU assignment mileage.

[1] Potential annual commuter miles represents the mileage which would be incurred if one on-call OSC per district were to commute using an assigned vehicle each work day. This calculation assumes each on-call OSC will equally share in the annual rotation of on-call periods.

[2] Savings are calculated based on $0.43 per mile. This cost per mile is reflective of the maintenance and operating cost for these specific vehicles as reported in the FY 2014-15 Annual Fleet Plan with the addition of depreciation based on NADA trade-in values at 120,000 miles.

As shown in **Table 1-12**, by changing assigned vehicle practices in the Central District, Northwest District, and Southwest District to model the more efficient practice employed in the Southeast District, these three district offices could see a potential annual savings of **$8,237** due to an overall reduction in commuter mileage. This would result in a reduction of 19,157 commuter miles driven annually, a cumulative 27.9 percent reduction in those three districts.

Conclusion

Current assigned vehicle commuter practices vary by district. The result is that not all districts are operating as efficiently as they could to minimize the cost of non-productive commuter miles.

Recommendation 1.3: OEPA should implement formal policies and procedures for the allowable use of assigned vehicles. In doing so, the Agency should implement practices that increase the overall efficiency of the Emergency Response Unit vehicles such as modifying the commuter practices currently in place to model those used in the Southeast District. Doing so will allow for reduced commuter mileage and associated costs.

Financial Implication 1.3: OEPA can reduce Emergency Response Unit assigned vehicle commuter mileage by modeling practices already in place within the Southeast District. Doing so will avoid 19,157 unnecessary commuter miles at a total cost of **$8,237** annually.

Issue for Further Study

Issues are sometimes identified by OPT that are not related to the objectives of the audit, but could yield economy and efficiency if examined in more detail. During the course of the audit, the ERU's organization and operations was identified as one such area.

Emergency Response Unit Organization and Operations: Similar to the ERU's lack of formal policies, procedures, and guidelines for consistent, efficient use of vehicles, the Unit also appears to lack consistency when delivering key services. This includes tracking and maintaining the data and information underlying those services. During the course of the performance audit, in an effort to better understand how the ERU, and specifically the OSCs, were using vehicles, a sample of District Office Investigation Reports (DOIRs) was reviewed.[17] This review identified inconsistencies in the organization and operation of the ERU.

Potential operational questions identified during the review include:

- **Decision to Initially Respond In-Person –** 177 or 61.0 percent of DOIRs included evidence of an in-person initial response. The remaining 113 or 39.0 percent included evidence of a phone-based initial response. Based on the data from the sample, OSCs responded on-scene an estimated 795 times in CY 2014. Although Division and ERU staff identified that there are "categories" of events (i.e., spills and releases) that dictate the need to respond, and the manner of response, these are not recorded in the DOIRs. Furthermore, there are informal rules in place, such as the need for an OSC to respond, in-person, at the request of the local first responder. However, during the course of the audit, Division and ERU leadership also noted that district-by-district perceptions of the capabilities of local first responders were an important factor in determining how the OSCs should respond. Finally, the decision to initially respond in person appears to also be influenced by districts. The Central District responded in this manner most frequently, 80.9 percent of the time, while the Northwest District responded in this manner least frequently, only 40.7 percent of the time.
- **Timeliness of Initial Response –** The time the spill was initially reported, the time that the report was received by ERU staff, and the time that the report was received by the OSC are all recorded on DOIRs. However, the time that the OSC arrived on-scene was either not recorded consistently or, in many cases, not recorded at all. As such, actual OSC response time is not being tracked or reported through the DOIRs to facilitate management oversight. A review of time-stamps for "initial discovery report" and "OSC action" found that the median time before action was taken was 3 hours and 5 minutes after the initial discovery report. The median time from notification of the ERU to action being taken by the OSC was 59 minutes. Furthermore, only 15.5 percent of DOIRs identified the OSC as the first emergency responder on the scene.
- **Decision to Follow-up –** 182 or 62.8 percent of DOIRs included evidence of an in-person or phone-based follow-up response. The remaining 108 or 37.2 percent had no evidence of follow-up response. For the 182 DOIRs with evidence of a follow-up response, 87 or 47.8 percent included evidence of an in-person follow-up response. The

[17] The sample was a statistically valid, stratified sample of 290 of 1,303 DOIRs from CY 2014. The large sample size and stratified nature of the sample were selected to ensure statistical validity to ERU districts.

remaining 95 or 52.2 percent included evidence of a phone-based follow-up response. Furthermore, the decision to follow-up appears to be influenced by district. The Northeast District was most likely to follow-up at 71.0 percent of the time. In contrast, the Central District was least likely to perform a follow-up at 46.8 percent of the time. Finally, the decision to follow-up in-person appears to also be influenced by district. The Central District responded in this manner most frequently, 72.7 percent of the time, while the Northwest District responded in this manner least frequently, only 28.9 percent of the time.

- **On-scene activities –** DOIRs generally contain detailed descriptions of activities while OSCs are on-scene. However, the level of detail did vary and, in some instances, did not appear to fully explain the amount of time spent on-scene or exactly why the OSC needed to be on-scene. Although OSCs have ready access to assigned tools and equipment, DOIR evidence identified that 61 or 21.0 percent of responses involved the OSC using assigned tools and/or equipment. Further 37 or 12.8 percent of responses involved the OSC using spill containment equipment (e.g., sorbent booms and pads). Finally, the majority of in-person responses were to work with first responders, the responsible party, and contractors to provide technical assistance and/or observation and oversight.

Finally, these inconsistencies and questions, though outside of the scope of this performance audit, could have an impact on the ERU assigned vehicles since they could impact the decision to respond, how to respond, and the type of tools and equipment necessary to respond. In short, there may be identifiable opportunities to use a mix of the current 3/4 ton pickup trucks as well as smaller, less costly vehicles (such as sedans or light SUVs).

OEPA leadership should further study the potential risk of the informal operating model relative to the risk mitigation potential of a more structured operating model. Furthermore, OEPA leadership should further study the potential efficiencies that could result from a uniform operating model supported by a mixed fleet of vehicles.

2. Laboratory Operations

Section Overview

This section focuses on the Ohio Environmental Protection Agency (OEPA or the Agency), Division of Environmental Services (DES or the Division); specifically, laboratory operations, including an assessment of the supply of labor to conduct testing and analysis as well as the demand for those services. Analysis identified opportunities to deliver program services more efficiently through restructuring current labor supply to better meet demand and/or increasing service demand to more efficiently utilize labor supply.

Recommendation Overview

Recommendation 2.1: OEPA should better match DES labor supply to seasonal demand by incorporating intermittent positions into the laboratory staffing plan in the following manner:

- **Inorganic Section – Replace four underutilized full-time employees with four 1,000-hour intermittent employees; and**
- **Organic Section – Replace one underutilized full-time employee with one 1,000-hour intermittent employee.**

Furthermore, the Agency should seek to maximize the utilization of any excess capacity by pursuing revenue-generating opportunities.

Financial Implication 2.1: OEPA can replace underutilized full-time employees with more fully utilized intermittent employees in the laboratory production sections and reduce personnel expense by a total of **$309,372** annually. Furthermore, fully utilizing available remaining capacity to capture fee-for-service work could result in additional revenue of **$910,559** annually. The net result of both changes is a total annual impact of **$1,219,931**.

R2.1 Laboratory Operations

Background

The primary function of DES is to provide laboratory services to customers, including OEPA divisions and other State and local governments. Customer-divisions within OEPA are statutorily empowered to monitor compliance with environmental laws across a variety of public and private entities. In practice, such monitoring activity involves the evaluation of scientific data gleaned from water, air, sediment, and fish tissue samples.

Revenue and Personnel Expenditures

Unlike other OEPA divisions, which are established and authorized by statute, DES exists as an Agency organizational choice to support division service needs. As such, DES is funded through internal service charges and allocations from other OEPA divisions. In-turn, DES provides needed analytical services. The Division's largest funding source is the Surface Water Protection Fund (Fund 4K40), followed by the Environmental Protection Fund (Fund 5BC0). Additionally, DES receives a small portion of its funding from the Laboratory Services Rotary Fund (Fund 1990) into which other divisions pay for laboratory analysis on a fee-for-service basis.

Table 2-1 shows total appropriations across these three funds for the last two complete fiscal years (FY), FY 2012-13 and FY 2013-14 as well as fiscal year-to-date (FYTD) 2014-15. Although FYTD 2014-15 was not completed as of this analysis, the appropriation for FY 2014-15 had already been established in the biennium operating budget for FY 2013-15.

Table 2-1: DES Appropriations by Fund

Fund	FY 2012-13	FY 2013-14	FYTD 2014-15	Three-Year Difference
Surface Water Protection	$2,096,007	$2,096,007	$2,096,007	$0
Environmental Protection	$958,586	$1,358,586	$1,558,586	$600,000
Laboratory Services Rotary	$408,560	$252,153	$326,029	($82,531)
Total Appropriations	**$3,463,153**	**$3,706,746**	**$3,980,622**	**$517,469**

Source: Ohio Legislative Services Commission

As shown in **Table 2-1**, budget appropriations increased by $517,469 over the last three fiscal years, with the increase being funded entirely through the Environmental Protection Fund.

Table 2-2 shows DES' total personnel expenses, including salaries and benefits, for the last two complete fiscal years, FY 2012-13 and FY 2013-14. Although partial data from FYTD 2014-15 is available, as of April 2015, it is not able to be accurately pro-rated to fully account for a seasonal influx of labor and cost due to the employment of interns during the summer months (see **Chart 2-1**). As such, FYTD 2014-15 is excluded from this table.

Table 2-2: DES Personnel Expense Overview

	FY 2012-13	FY 2013-14
Salary Expense	$1,802,404	$1,908,176
Benefits Expense [1]	$686,716	$727,015
Total Personnel Expenditures	**$2,489,120**	**$2,635,191**
Total DES Appropriations	$3,463,153	$3,706,746
Personnel Cost as % of Total DES Appropriations	**71.9%**	**71.1%**

Source: OEPA

[1] Based on OEPA's average benefits rate of 38.1 percent for FY 2013-14.

As shown in **Table 2-2**, total personnel expenses increased slightly from $2.5 million to $2.6 million over the time-period shown. During this same period, personnel cost as a percent of total DES appropriations declined slightly from 71.9 percent to 71.1 percent. This is due to the increase in total personnel expenditures of $146,071 being slightly outpaced by the total DES appropriations increase of $243,593.

Organization and Staffing

The Division is organized into four main sections all overseen by the DES Chief, including:[18]

- **Administration –** This section provides overall leadership inclusive of the Chief, as well as fiscal and operational support for the Division.
- **Laboratory Production –** This section is divided into the following three sub-sections that produce analytical results, including:
  - **Inorganic Section –** This section tests for inorganic pollutants such as arsenic, cyanide, lead, mercury, and oil.
  - **Organic Section –** This section tests for contaminants such as algal toxins, herbicides, pesticides, and volatile organic compounds.
  - **Bioassay** – This section conducts procedures that test for the concentration of substances by measuring the effects on living organisms (i.e., fish).
- **Laboratory Quality Assurance –** This section conducts supporting work to test and validate the methods and results of the laboratory production sections.
- **Drinking Water Laboratory Certification (Laboratory Certification) –** This section applies to all drinking water laboratories in Ohio that service public water systems. The Division inspects these laboratories for proper equipment and facilities as well as for trained staff employing proper analytical techniques.[19]

[18] During the course of the performance audit the position of DES Chief was vacated and then filled by an internal candidate now acting as the interim DES Chief.

[19] The Drinking Water Laboratory Certification Program employs four full-time DES staff. However, the scope of services provided within this program is not included within the scope of this performance audit.

Table 2-3 shows total FTEs employed across the various sections during the last two complete fiscal years, FY 2012-13 and FY 2013-14. FTEs in the table are based on total hours worked. As such (and similar to **Table 2-2)**, FYTD 2014-15 is excluded from this table. However, as of April 2015, DES had 29 full-time, permanent staff on payroll.

Table 2-3: DES Employees by Section

DES Section	FY 2012-13	FY 2013-14
Administration [1]	**5.9**	**5.0**
Laboratory Production	**15.7**	**18.3**
• Inorganic Section	8.5	10.7
• Organic Section	6.2	6.6
• Bioassay	1.0	1.0
Laboratory Quality Assurance	**3.7**	**4.0**
Laboratory Certification	**4.4**	**4.4**
Total DES FTEs	**29.7**	**31.7**

Source: OEPA and DES

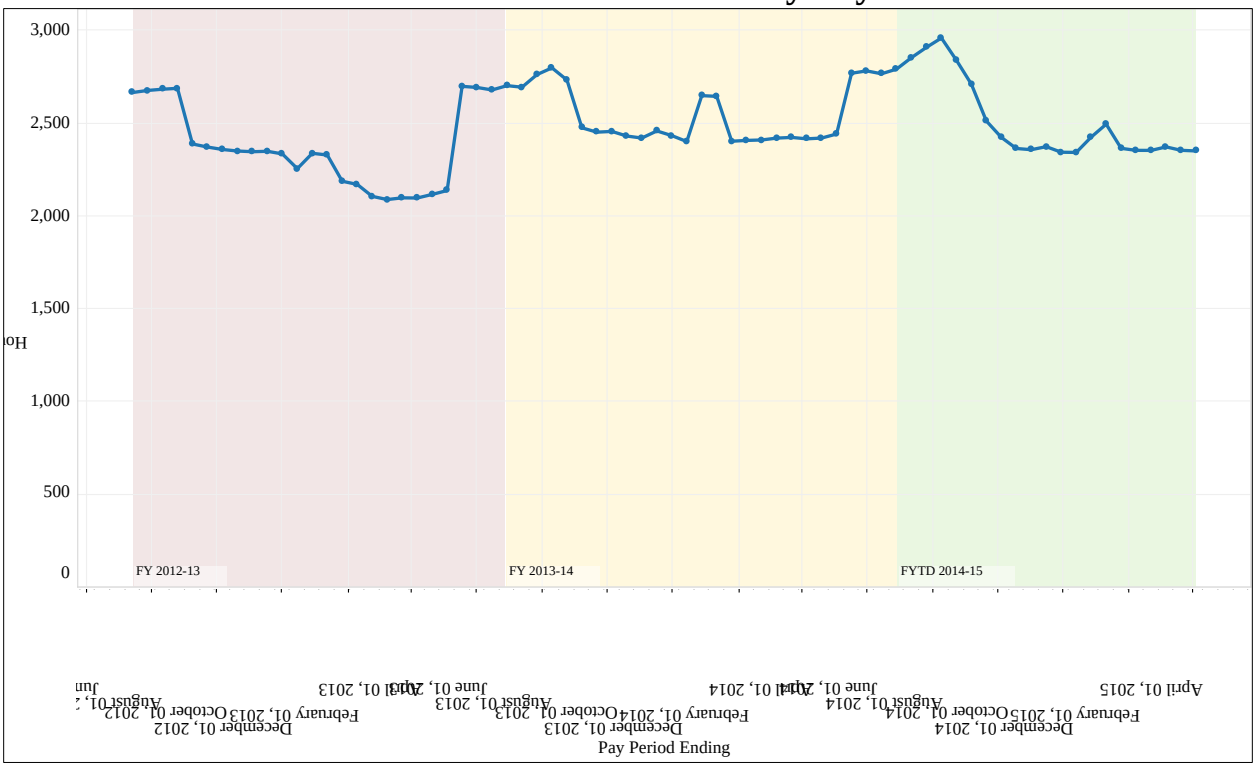
Note: FTEs are calculated based on 2,080 hours per year.

[1] DES employs a Laboratory Manager who provides direction and oversight for the Laboratory Production and Laboratory Quality Assurance sections. Due to the focus on management rather than production, or production support, this position is classified as administration for the purposes of this analysis.

As shown in **Table 2-3**, Laboratory Production, as a whole, consistently employed the majority of DES employees; 52.9 percent in FY 2012-13 and 57.7 percent in FY 2013-14. Within Laboratory Production, however, the Inorganic and Organic Sections accounted for more than 90.0 percent of all FTEs while Bioassay had just a single FTE.

Chart 2-1 shows total DES hours worked by pay period, inclusive of all sections, for the last two complete fiscal years, FY 2012-13 and FY 2013-14, as well as FYTD 2014-15. This type of analysis demonstrates how DES augments its workforce with college interns during certain busy parts of the year.

Chart 2-1: DES Hours Worked by Pay Period



Source: OEPA and DES

As shown in **Chart 2-1**, DES is staffed to a baseline of approximately 2,400 hours per pay period during the time-period shown. This baseline labor has, and continues to be, supplemented with approximately 400 additional hours per pay period during the busier summer months. These supplemental hours are generally the equivalent of five college interns. A limited amount of compensatory time on behalf of permanent employees further increases the total hours worked during the busier months. The increased hours worked in January 2014 and January 2015 are a result of intern labor brought in to assist with fish tissue samples, which are processed during the winter months.

Customer Demand for Services

At the beginning of each year, DES drafts memorandums of agreement (MOA) with each of its major customers. These MOAs outline the key provisions and expectations to be met between DES and the customer-divisions, including estimates of the number of samples to be analyzed, turn-around time for results, and methodologies to be used in sample analyses.

The largest internal user of DES laboratory services is the Division of Surface Water (DSW), followed by the Division of Air and Pollution Control (DAPC), the Division of Drinking and Ground Waters (DDAGW), the Division of Materials and Waste Management (DMWM), the Division of Environmental Response and Revitalization (DERR), and the Office of Special Investigations (OSI). The largest external user of DES laboratory services is the Ohio Department of Natural Resources (ODNR) which mainly utilizes the laboratory to test water samples from public swimming beaches.

Table 2-4 shows internal and external customers served by DES by number of samples analyzed and percent of annual total samples, during the last two complete fiscal years, FY 2012-13 and FY 2013-14, as well as FYTD 2014-15. This overview helps to show DES customers as a raw percentage of total services provided.

Table 2-4: DES Customers by Sample Volume

	FY 2012-13		FY 2013-14		FYTD 2014-15	
Customer	**Samples Analyzed**	**% of Total**	**Samples Analyzed**	**% of Total**	**Samples Analyzed**	**% of Total**
DSW	7,214	67.15%	7,232	65.97%	5,658	65.42%
DAPC	2,458	22.88%	2,327	21.23%	1,886	21.81%
DDAGW – GW [1]	463	4.31%	510	4.65%	296	3.42%
DDAGW – DW [1]	213	1.98%	341	3.11%	366	4.23%
ODNR	101	0.94%	189	1.72%	149	1.72%
DMWM	72	0.67%	136	1.24%	124	1.43%
DERR	115	1.07%	91	0.83%	72	0.83%
OSI	2	0.02%	88	0.80%	53	0.61%
Others [2]	96	0.89%	38	0.35%	36	0.42%
DES	9	0.08%	10	0.09%	9	0.10%
Total	**10,743**	**100.00%**	**10,962**	**100.00%**	**8,649**	**100.00%**

Source: OEPA and DES
Note 1: FYTD 2014-15 is as of April 2015.
Note 2: Customers are ordered by FY 2013-14 sample volume; the last full year of available data.
[1] DDAGW requires analytical services for two types of waters; drinking water (DW) and ground water (GW).
[2] Other customers included the City of Cleveland, Ohio; Ohio Department of Agriculture (ODA); Ohio Department of Health (ODH); and the US Environmental Protection Agency (USEPA).

As shown in **Table 2-4**, DSW and DAPC consistently account for the majority of the Division's sample analysis work; cumulatively more than 85.0 percent over the time-period shown. Furthermore, for the last two complete fiscal years, the total number of samples analyzed has remained relatively constant; both across these two main users and in total for all DES customers.

Although sample volume is important, not all samples involved the same analytical procedures, instruments, and/or supplies and materials. As such, sample volume is a limited way to assess actual DES workload and customer demand. Though only a small portion of DES funding comes from fee-for-service work (see **Table 2-1**), the Division does maintain a complete price list for all analytical services. The methodology DES used to establish the price list incorporated estimates of labor as well as equipment and supplies and materials needed to complete each analysis. As such, using the Division's established price is a better benchmark of workload and resource demand than a simple count of samples analyzed.

Table 2-5 shows internal and external customers served by DES, by price of samples analyzed and as a percent of annual total prices, for the last two complete fiscal years, FY 2012-13 and FY 2013-14, as well as FYTD 2014-15. As noted, analyzing by price provides a more accurate picture of workload associated with the Division's laboratory services.

Table 2-5: DES Customers by Sample Price

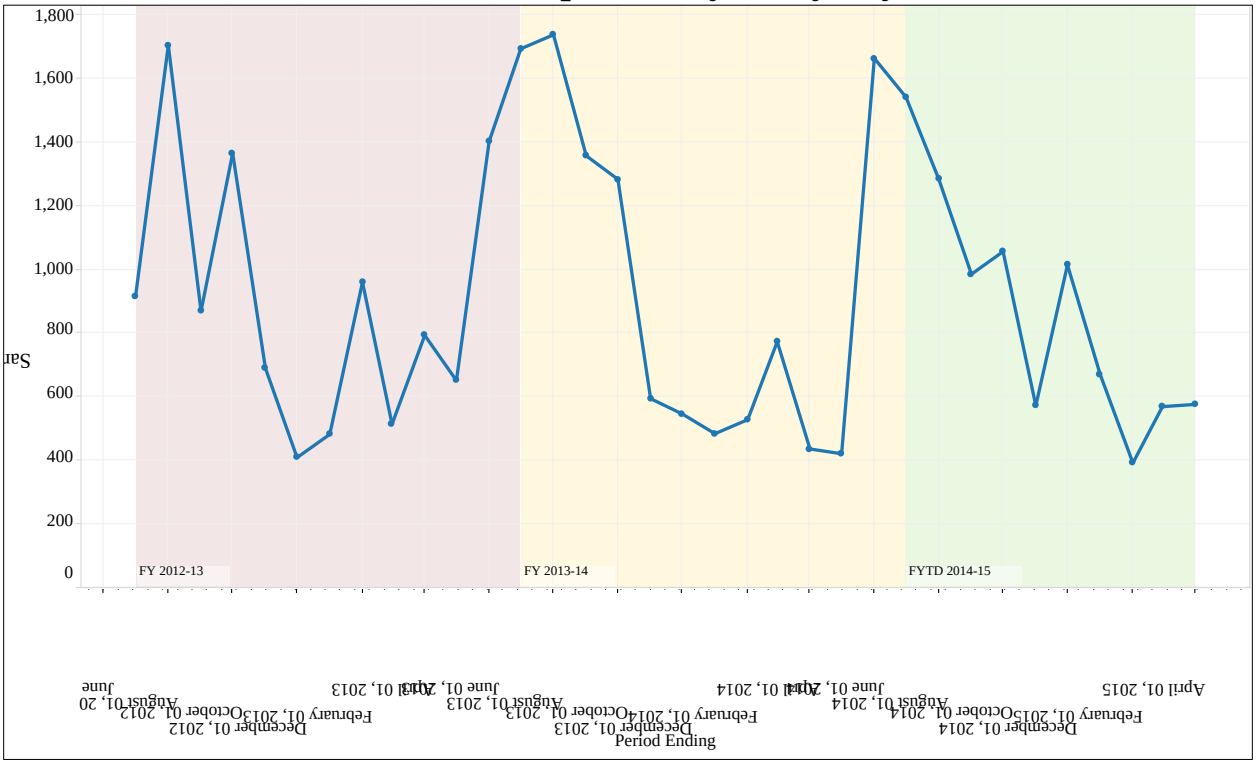
	FY 2012-13		FY 2013-14		FYTD 2014-15	
Customer	**Total Price**	**% of Total**	**Total Price**	**% of Total**	**Total Price**	**% of Total**
DSW	$2,273,872	84.03%	$2,054,407	81.59%	$1,749,481	82.94%
DAPC	$227,349	8.40%	$213,941	8.50%	$191,593	9.08%
DDAGW – GW [1]	$142,517	5.27%	$149,495	5.94%	$88,505	4.20%
DMWM	$16,262	0.60%	$40,648	1.61%	$29,100	1.38%
DERR	$16,258	0.60%	$13,195	0.52%	$9,935	0.47%
DDAGW – DW [1]	$8,550	0.32%	$12,413	0.49%	$17,642	0.84%
DES	$3,127	0.12%	$9,733	0.39%	$4,349	0.21%
OSI	$92	0.00%	$8,707	0.35%	$7,333	0.35%
ODNR	$5,254	0.19%	$7,662	0.30%	$6,175	0.29%
Others [2]	$12,851	0.47%	$7,650	0.30%	$5,307	0.25%
Total	**$2,706,132**	**100.00%**	**$2,517,851**	**100.00%**	**$2,109,420**	**100.00%**

Source: OEPA and DES
Note 1: FYTD 2014-15 is as of April 2015.
Note 2: Customers are ordered by FY 2013-14 total price; the last full year of available data.
[1] DDAGW requires analytical services for two types of waters; drinking water (DW) and ground water (GW).
[2] Other customers included the City of Cleveland, Ohio; Ohio Department of Agriculture (ODA); Ohio Department of Health (ODH); and the US Environmental Protection Agency (USEPA).

As shown in **Table 2-5**, DSW and DAPC, similar to raw sample volume, consistently account for the majority of DES sample analysis prices; in this case, cumulatively more than 90.0 percent per year over the time-period shown.

Chart 2-2 shows the laboratory's monthly counts of samples analyzed for the last two complete fiscal years, FY 2012-13 and FY 2013-14, as well as FYTD 2014-15. Similar to staffing, the output, in terms of samples analyzed, varies during different periods of the year. For example, DSW, the largest customer (see **Table 2-4** and **Table 2-5**), collects most its surface water samples during the summer months, and this dynamic is reflected in the laboratory's seasonal output.

Chart 2-2: DES Samples Analyzed by Pay Period



Source: OEPA and DES

As shown in **Chart 2-2**, the count of samples analyzed shows a wide variability over the course of the year. During FY 2013-14, the month with the least samples analyzed, May, had 420, while the month with the most samples analyzed, August, had 1,736, a variance of 1,316 samples or 413.3 percent.

Since customer base and annual number of samples analyzed has remained consistent in recent years, DES has based staffing and capacity strategy on the status quo achieved in these same years. However, the wide variance in samples analyzed suggests that there are opportunities to further evaluate the Laboratory Production Section, including the Organic and Inorganic Sections, in greater detail to assess true workload supply and demand.

Methodology

This section of the performance audit, **Laboratory Operations**, seeks to analyze the efficient use of DES' laboratory resources in meeting customer service demands. During the planning and scoping phase of this performance audit, OEPA leadership identified the Division's laboratory operations as an area that could benefit from an objective review. One factor contributing to this potential benefit is the ongoing discussion regarding possible efficiencies between OEPA, the Ohio Department of Agriculture (ODA), and the Ohio Department of Health (ODH). These three independently run laboratories are co-located on the ODA campus in Reynoldsburg, Ohio.

Specific to OEPA, there have been successful partnerships such as the procurement of advanced testing services from the ODA Laboratory when OEPA was otherwise unable to perform these tests due to lack of necessary instruments. In this case, the required instrument was very costly to purchase and was already in service at ODA. As such, it made practical sense for both laboratories to partner; increasing the throughput and cost-effectiveness of ODA's instrument and avoiding the need to purchase a new instrument for OEPA. Although there are successes to highlight; overall, these partnerships have been limited.

During the course of this performance audit, leadership from DES, ODA, and ODH laboratories began meeting to identify opportunities for increased efficiency and effectiveness through partnership.

Staffing and workload information, including salary and benefit costs, was obtained from the Ohio Administrative Knowledge System (OAKS), OEPA's time accounting system (TAS), and Division rosters. Workload information (e.g., samples, analyses, and parameters) was obtained from the Division's Laboratory Information Management System (LIMS). Where necessary to develop a full understanding of operations, OEPA and Division leadership and staff provided supplemental testimonial evidence. Primary analysis and conclusions were based on FY 2013-14, the last full year of operational data available at the time of this analysis. This was supported by FY 2012-13 and FYTD 2014-15 operating information, as available and applicable.

Overall, the analysis was engineered to identify possible instances in DES laboratory operations where the available productive capacity exceeds the capacity required to meet the demand for laboratory services. Three broad steps were needed to arrive at a determination of excess capacity. First, the analysis focuses on overlaying labor supplied with the actual testing and analytical demand, making several adjustments to improve the quality of available datasets. The analysis then focuses on measuring the efficiency and rate of production achieved by the laboratory's production sections across various pay periods. The analysis then uses the identified, proven rates of production to calculate the excess capacity present. Finally, after the identification of excess capacity, the analysis quantifies two scenarios to address the identified labor supply/demand imbalance; including: options to more efficiently supply labor in relation to demand and/or options to increase efficiency and revenue through the capture of new business.

Analysis

TAS and LIMS Overview

Like other OEPA divisions, DES employees record work activities in TAS. However, unlike many other divisions, the laboratory's work product is measured and recorded in detail in LIMS. LIMS stores information such as: when a sample was received, the types and prices of tests conducted on a sample, the laboratory section that worked on a sample, and the date on which the analysis was completed. By overlaying the TAS and LIMS datasets, a picture of historical production rates is created and excess capacity can be identified. As the majority of the analysis is built on top of TAS and LIMS data, a brief overview of the capabilities and output of the two systems is provided.

As noted, TAS is used to record employee activity (e.g., hours worked and type of work performed). TAS uses an activity-based costing hierarchy that allows employees to code job activities performed as part of the time-sheet submission process. The broadest category of activity available in TAS is called a work class, and the main work classes used by DES staff are Technical Analysis, General Administration, and Leave. Technical Analysis was identified by DES leadership and staff as the appropriate work class in which to code all activity related to the direct production of analytical sample results. Non-supervisory employees within the Inorganic Section, Organic Section, and Bioassay sections generally code almost all of their non-leave time to Technical Analysis. Because of its apparent direct relationship with production of sample analysis, the hours coded in TAS as Technical Analysis have the potential to serve a useful role in the quantitative evaluation of laboratory capacity and output.

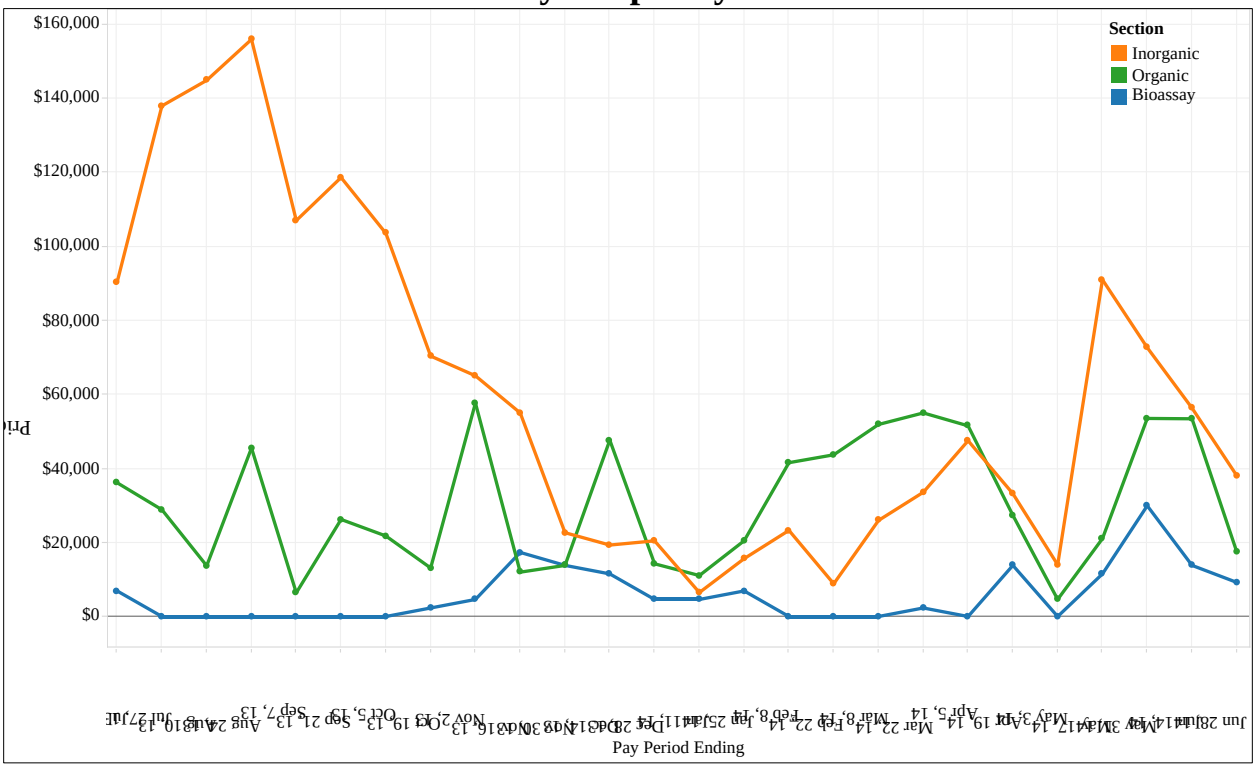
Though it is intended as a measure of direct labor, there are identified shortcomings in the Division's usage of TAS that precluded using the Technical Analysis work class as a direct measure of productive labor. For example, DES leadership and staff identified that employees within the main laboratory sections are entering Technical Analysis on timesheets as the "default" billing code. Functionally, this practice results in a condition where a backward-looking evaluation of Technical Analysis is not able to effectively distinguish between the three possible activities that are reflected in the data, including:

- **Direct Labor –** Time where employees are productively engaged in producing sample analysis.
- **Indirect Labor –** Time where employees are engaged in activities necessary to laboratory operations, but not directly related to producing sample analysis.
- **Downtime –** Time where employees are not actively engaged in either direct labor or necessary indirect labor.

Additional evaluations were devised to work around this shortcoming in the time-accounting process, and are addressed later in the analysis.

Chart 2-3 shows LIMS output, in terms of total price of the samples analyzed, for each laboratory section for each pay period during FY 2013-14. As previously noted, price is a more accurate indicator of workload than a simple count of samples processed.

Chart 2-3: Laboratory Output by Section FY 2013-14



Source: OEPA and DES

As shown in **Chart 2-3**, all sections display characteristics of peaks and troughs in workload, though the peaks occur at slightly different times throughout the year. The Inorganic Section has the largest seasonal differential, with $155,800 in charges for samples analyzed during the August 24th pay period and only $6,459 in charges for samples analyzed during the January 11th pay period. This 2,412.1 percent difference in charges for samples analyzed in the Inorganic Section is even greater than the 413.3 percent difference in count of samples shown in **Chart 2-2** for the entire Division.

The output shown in **Chart 2-3** is based on the pay period when samples were documented as "approved" in LIMS. The date approved corresponds to the day on which the final quality assurance signoffs have been met, and the analysis results are ready to be returned to the customer. This manner of grouping does not necessarily correspond to the pay period in which staff conducted all activities related to sample preparation and testing procedures. Certain types of testing can span multiple days and weeks, and as such, a further adjustment is needed to determine a more accurate measure of workload during individual pay periods.

Both TAS and LIMS data sets are central to the analysis that was developed to evaluate if a condition of downtime, or excess labor capacity, exists in the laboratory. The analysis of excess capacity is organized into three major steps, including:

- Several technical adjustments to the TAS and LIMS datasets to create a more accurate match between labor effort and the resulting output;
- An identification of the peak rate of production that was demonstrated during the periods under analysis, and;
- A quantification of the amount of labor downtime, or underutilized productive capacity, that existed in the period under analysis.

These layers of analysis were conducted independently for both the Inorganic and Organic Sections.

TAS and LIMS Adjustments

1. Inaccurate Employee Section Assignments in TAS

As previously noted, there were identified inaccuracies in TAS employee section assignments. Raw data generated from a TAS query listed 18 employees assigned to the Administration section, which was inconsistent with the actual table of organization. These inaccuracies were corrected in the data set used for analysis by reassigning employees based on actual operational roles. The reassignment was informed by both the official table of organization and input from Division leadership. Actual FTEs assigned to the Inorganic and Organic Sections in FY 2013-14 were 10.7 and 6.6 respectively.[20]

2. Indirect Labor Estimation

A second adjustment related to the TAS dataset involves separating the indirect labor of laboratory employees from the work class Technical Review/Technical Analysis. Two facts were revealed during the course of the performance audit that necessitated this adjustment.

First, there is a subset of non-production-related activities, termed "indirect labor", that are essential to continuing laboratory operations, yet are not directly related to the analysis of samples. The main activities comprising indirect labor relate to equipment maintenance, skills certifications, procedure and method development, and calibration studies. Laboratory supervisors provided estimates for the portion of employee time dedicated to indirect labor activities, and the interim DES Chief validated these estimates. The Organic Section Supervisor estimated that 12.6 percent of employee time is needed to fulfill essential indirect labor activities. Similarly, the Inorganic Section Supervisor estimated 13.8 percent for these activities. Only non-supervisory employees are required to engage in these activities, and with the exception of equipment maintenance, all indirect labor activities are able to be completed during the non-busy season.

[20] See **Table 2-3** for FTEs in other fiscal years and in other DES sections.

Second, it was determined that current and historical practice of laboratory employees has been to use the Technical Analysis work class to code indirect labor activities. As the intended methodology used Technical Analysis as the basis for determining hours dedicated to direct production-related labor, indirect labor hours were removed to calculate only the hours available for sample production. Once the effect of indirect labor is removed from Technical Analysis, the only remaining components in Technical Analysis are productively-engaged labor and downtime.

3. Samples for which the Duration of Analysis Extends Beyond a Single Pay Period

As previously noted, LIMS data was aggregated on the basis of when a sample was "completed". Since this is a single point in time it does not accurately inform a complete picture of the dates over which the work was conducted. Analysis of laboratory capacity uses the two-week pay period as the smallest unit of measurement, so an additional methodology is needed to ensure output is correctly categorized on the basis of the actual pay period in which laboratory work was conducted. Because another date is specified in LIMS when the sample was "received" by DES, an adjustment to allocate output to the pay period in which laboratory work occurred was able to be made.

The difference between the two dates, sample completion and sample reception, gives a measure of the duration of the laboratory analysis. For a sample with an average analysis duration of longer than 14 days, the analysis uses a methodology to allocate a proportion of the LIMS output to prior pay periods.

Table 2-6 shows the methodology used to more accurately match LIMS output to the pay periods in which laboratory employees would have been performing the work for the Organic Section in FY 2013-14.

Table 2-6: Organic Section Analysis Duration FY 2013-14

Pay Period Ending	Avg. Analysis Duration (Days)	LIMS Output Allocations			
		Current Pay Period	Current Pay Period -1	Current Pay Period -2	Current Pay Period -3
7/13/2013	14.5	96.5%	3.5%	0.0%	0.0%
7/27/2013	10.4	100.0%	0.0%	0.0%	0.0%
8/10/2013	7.9	100.0%	0.0%	0.0%	0.0%
8/24/2013	8.7	100.0%	0.0%	0.0%	0.0%
9/7/2013	8.2	100.0%	0.0%	0.0%	0.0%
9/21/2013	9.9	100.0%	0.0%	0.0%	0.0%
10/5/2013	7.0	100.0%	0.0%	0.0%	0.0%
10/19/2013	8.1	100.0%	0.0%	0.0%	0.0%
11/2/2013	10.6	100.0%	0.0%	0.0%	0.0%
11/16/2013	12.4	100.0%	0.0%	0.0%	0.0%
11/30/2013	12.8	100.0%	0.0%	0.0%	0.0%
12/14/2013	19.9	70.4%	29.6%	0.0%	0.0%
12/28/2013	9.5	100.0%	0.0%	0.0%	0.0%
1/11/2014	23.4	59.8%	40.2%	0.0%	0.0%
1/25/2014	34.1	41.0%	41.0%	18.0%	0.0%
2/8/2014	51.8	27.0%	27.0%	27.0%	19.0%
2/22/2014	32.5	43.1%	43.1%	13.8%	0.0%
3/8/2014	47.6	29.4%	29.4%	29.4%	11.8%
3/22/2014	42.8	32.7%	32.7%	32.7%	1.9%
4/5/2014	55.0	25.4%	25.4%	25.4%	23.8%
4/19/2014	28.9	48.4%	48.4%	3.3%	0.0%
5/3/2014	14.9	93.8%	6.2%	0.0%	0.0%
5/17/2014	11.8	100.0%	0.0%	0.0%	0.0%
5/31/2014	19.8	70.8%	29.2%	0.0%	0.0%
6/14/2014	20.7	67.6%	32.4%	0.0%	0.0%
6/28/2014	16.5	84.8%	15.2%	0.0%	0.0%

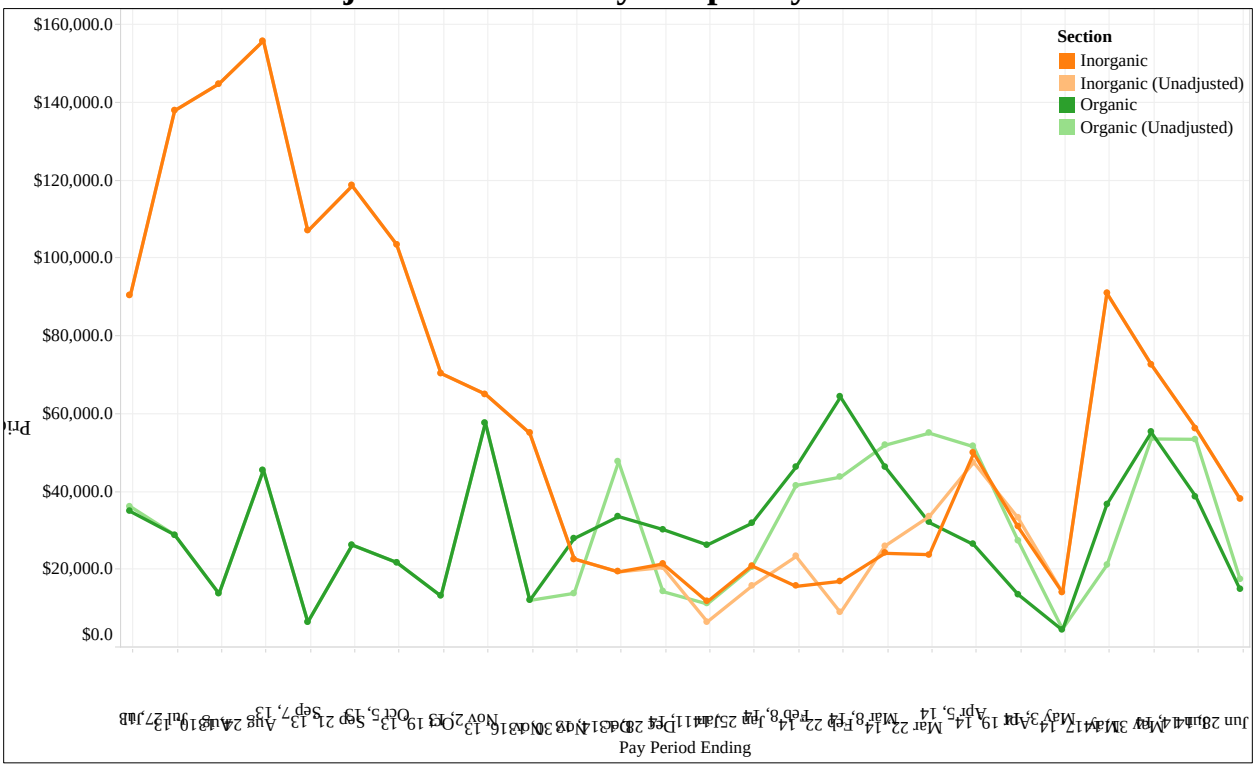
Source: OEPA and DES
Note: Shading represents periods of time that were not applicable to the analysis.

As shown in **Table 2-6**, during the pay periods for which the average analysis duration was 14 days or less, 100.0 percent of the sample output is allocated to the current pay period. When the average analysis duration exceeds 14 days, the methodology proportionally allocates a percentage of sample output to prior pay periods. For example, the average sample approved during the pay period ending 12/14/2013 was received 19.9 days prior to approval. Under this methodology 70.4 percent (14/19.9) would be allocated to the current pay period and the remaining 29.6 percent ((19.9-14)/19.9) would be allocated to the prior pay period. These percentages are then applied to the LIMS output from a given pay period to reallocate the output to pay periods where the work was conducted.

The methodology demonstrated in **Table 2-6**, results in a distribution of output by laboratory section different than the output data aggregated solely based on the date of test completion, which was previously shown in **Chart 2-3**.

Chart 2-4 shows this revised laboratory output in the Inorganic and Organic Sections, in terms of sample price, after applying the methodology that more closely allocates work to the pay period in which it was performed. For reference, the unadjusted measures of sample output from **Chart 2-3** are also represented in lighter color shades.

Chart 2-4: Adjusted Laboratory Output by Section FY 2013-14



Source: OEPA and DES

As shown in **Chart 2-4**, the adjustment for work occurring in prior periods did not materially change the output picture in either laboratory section. In the Inorganic Section, there were several pay periods in which the average duration of the sample analysis exceeded 14 days, and as a result, the lines for adjusted and unadjusted output measures mainly overlap. The adjustment methodology did result in changes in the calculated output for the Organic Section during the winter months.[21] Rather than dramatically smoothing out peaks and troughs, however, the result of adjusting the output of the Organic Section was mainly to shift the work performed backwards in time.

Identification of Peak-Production Rates

With several adjustments made to improve the accuracy of the match between labor and sample output generated in the TAS and LIMS systems, a simple division of the recorded sample output by labor input produces a production rate.

[21] This is consistent with the analysis of fish tissue samples, which is the primary output of the Organic Section in the winter months. The workflow to process fish tissue samples involves substation preparation steps as well as batching of the actual analysis, which results in the long duration between sample intake and sample approval as seen in **Table 2-6**.

Though it is more intuitive to consider production rates in terms of samples per hour, a better measure of output was previously shown to be the price of samples analyzed. Again, prices control for the fact that some samples require less effort than others to analyze. For this reason, the selected benchmark for production rates in the following analysis is the price of sample output divided by Technical Analysis hours.

Table 2-7 shows the production rates of the two sections for each pay period of FY 2013-14.

Table 2-7: Production Rates FY 2013-14

	Organic Section			Inorganic Section		
Pay Period Ending	**Technical Analysis Hours [1]**	**Sample Output Volume [2]**	**Production Rate ($/ Hr.)**	**Technical Analysis Hours [1]**	**Sample Output Volume [2]**	**Production Rate ($/ Hr.)**
7/13/2013	494.6	$36,106	$73.00	576.8	$90,254	$156.46
7/27/2013	565.7	$28,826	$50.96	614.8	$137,847	$224.20
8/10/2013	532.3	$13,687	$25.71	700.7	$144,746	$206.56
8/24/2013	464.1	$45,481	$98.00	717.0	$155,800	$217.28
9/7/2013	413.9	$6,391	$15.44	516.6	$106,898	$206.91
9/21/2013	475.0	$26,201	$55.16	553.9	$118,508	$213.94
10/5/2013	469.0	$21,737	$46.35	521.8	$103,457	$198.26
10/19/2013	411.3	$13,097	$31.84	515.4	$70,306	$136.40
11/2/2013	448.4	$57,615	$128.49	592.5	$64,983	$109.67
11/16/2013	395.5	$11,967	$30.26	515.4	$54,948	$106.60
11/30/2013	382.7	$13,785	$36.02	395.8	$22,619	$57.14
12/14/2013	423.4	$47,601	$112.42	520.3	$19,281	$37.06
12/28/2013	413.0	$14,222	$34.44	522.2	$20,419	$39.10
1/11/2014	317.9	$11,053	$34.77	424.8	$6,459	$15.20
1/25/2014	387.7	$20,449	$52.74	493.1	$15,616	$31.67
2/8/2014	377.6	$41,525	$109.97	522.9	$23,240	$44.44
2/22/2014	393.3	$43,650	$110.98	514.5	$8,822	$17.15
3/8/2014	436.8	$51,840	$118.68	511.7	$25,930	$50.67
3/22/2014	459.4	$54,958	$119.63	552.3	$33,536	$60.72
4/5/2014	445.1	$51,470	$115.64	572.5	$47,449	$82.88
4/19/2014	408.7	$27,309	$66.82	525.7	$33,154	$63.06
5/3/2014	377.9	$4,610	$12.20	506.5	$13,962	$27.56
5/17/2014	464.1	$21,034	$45.32	670.2	$90,914	$135.65
5/31/2014	453.9	$53,468	$117.80	562.0	$72,582	$129.14
6/14/2014	520.5	$53,374	$102.54	717.6	$56,260	$78.40
6/28/2014	452.3	$17,408	$38.49	754.7	$38,001	$50.35
Max. as % of Min.			**10.53x**			**14.75x**
Average of Top-5 PPs			**$120.05**			**$213.78**

Source: OEPA and DES

Note: The top five production rates within each section are shaded.

[1] Technical Analysis Hours were calculated from TAS.

[2] Sample Output Volume, shown as the total price of samples analyzed, was calculated from LIMS.

As shown in **Table 2-7**, the Inorganic Section had the highest production rate during the pay period ending 7/27/2013, while the Organic Section had the highest rate of production during the pay period ending 11/2/2013, indicating different peak seasons. The maximum production rate as a percentage of the minimum highlights the wide range in the production rates achieved throughout the year. The pay period with the highest production rate in the Organic Section, $128.49 for 11/2/2013, is 10.53 times higher than the pay period with the lowest production rate, $12.20 for 5/3/2014.

In the subsequent section of analysis, the method for quantifying downtime requires an assumption that specifies a single peak-production rate for each laboratory section. The most obvious way to determine a peak production rate would be to reference the single pay period with the highest proven rate of production. Feedback from laboratory management, however, raised concerns that the rate of production during the single highest pay period may not be operationally sustainable. To add a layer of conservatism to the quantification of downtime in the lab, analysis uses a peak-production rate comprised of an average of the five pay periods with highest production rates during the year. The interim DES Chief confirmed that this rate of production could be sustained. Inorganic Section peak production was calculated at $213.78 while Organic Section peak production was calculated at $120.05.

Quantification of Excess Capacity

Using the previously developed estimate of indirect labor required in the laboratory sections, it is possible to subtract indirect labor from Technical Analysis to arrive at a pool of hours that were available for production-related sample analysis in each pay period. Within this remaining pool of hours, employees of the laboratory sections could have either been engaged in productive output or subject to downtime. The estimate of a proven peak production rate enables a determination to be made on what proportion of Technical Analysis hours coded was functionally downtime. By dividing the actual sample output during a given pay period by the peak production rate, the amount of productive hours required to achieve the output is calculated. When these required hours are subtracted from the actual available Technical Analysis hours, the remainder is a quantification of downtime.

Table 2-8 shows the methodology used to determine downtime in the Inorganic Section during FY 2013-14. Starting with the Technical Analysis hours specified in TAS, the indirect labor hours estimated by laboratory managers is subtracted to arrive at the remaining hours available for sample analysis. Based on staff input, the equipment maintenance component of indirect labor is represented to occur year-round, and the remaining indirect labor hours are represented to occur during six months of the off-season beginning in the pay period ending 11/2/2013. Next, the amount of labor hours that would have been required to fulfill the actual sample output volume during the pay period is calculated using the average peak production rate derived from **Table 2-7**. The amount of laboratory labor hours required to fulfill the sample volume in a given pay period is equal to the sample volume divided by $213.78. Excess capacity is equal to the hours available for sample analysis minus the labor hours required to fulfill the sample volume.[22]

[22] The periods shown to have zero (0.0) excess capacity would have actually resulted in negative values when subtracting required labor hours at the peak production rate from the hours available for sample analysis. The negative values are generated as a result of using a peak-production rate that is the average of the top-five, most

Table 2-8: Inorganic Section Downtime Identification FY 2013-14

Pay Period Ending	Technical Analysis Hours	Indirect Labor Hours	Hours Available for Sample Analysis	Sample Output Volume	Labor Hours Required @ $213.78 Rate	Excess Capacity Hours
7/13/2013	611.8	35.0	576.8	$90,253.50	422.2	154.6
7/27/2013	649.8	35.0	614.8	$137,847.00	644.8	0.0
8/10/2013	735.7	35.0	700.7	$144,746.00	677.1	23.6
8/24/2013	752.0	35.0	717.0	$155,799.50	728.8	0.0
9/7/2013	551.6	35.0	516.6	$106,897.50	500.0	16.6
9/21/2013	588.9	35.0	553.9	$118,507.50	554.3	0.0
10/5/2013	556.8	35.0	521.8	$103,456.50	483.9	37.9
10/19/2013	550.4	35.0	515.4	$70,306.00	328.9	186.5
11/2/2013	627.5	169.8	457.7	$64,982.50	304.0	153.7
11/16/2013	550.4	169.8	380.6	$54,947.50	257.0	123.6
11/30/2013	430.8	169.8	261.0	$22,619.00	105.8	155.2
12/14/2013	555.3	169.8	385.5	$19,281.00	90.2	295.3
12/28/2013	557.2	169.8	387.4	$20,419.00	95.5	291.9
1/11/2014	459.8	169.8	290.0	$6,458.50	30.2	259.8
1/25/2014	528.1	169.8	358.3	$15,616.00	73.0	285.3
2/8/2014	557.9	169.8	388.1	$23,240.00	108.7	279.4
2/22/2014	549.5	169.8	379.7	$8,822.00	41.3	338.4
3/8/2014	546.7	169.8	376.9	$25,929.50	121.3	255.6
3/22/2014	587.3	169.8	417.5	$33,535.50	156.9	260.6
4/5/2014	607.5	169.8	437.7	$47,449.00	222.0	215.7
4/19/2014	560.7	35.0	525.7	$33,154.00	155.1	370.6
5/3/2014	541.5	35.0	506.5	$13,961.50	65.3	441.2
5/17/2014	705.2	35.0	670.2	$90,914.00	425.3	244.9
5/31/2014	597.0	35.0	562.0	$72,581.50	339.5	222.5
6/14/2014	752.6	35.0	717.6	$56,260.00	263.2	454.5
6/28/2014	789.7	35.0	754.7	$38,000.50	177.8	576.9
Total	**15,501.7**	**2,527.6**	**12,974.1**	**$1,575,984.50**	**7,372.1**	**5,644.2**

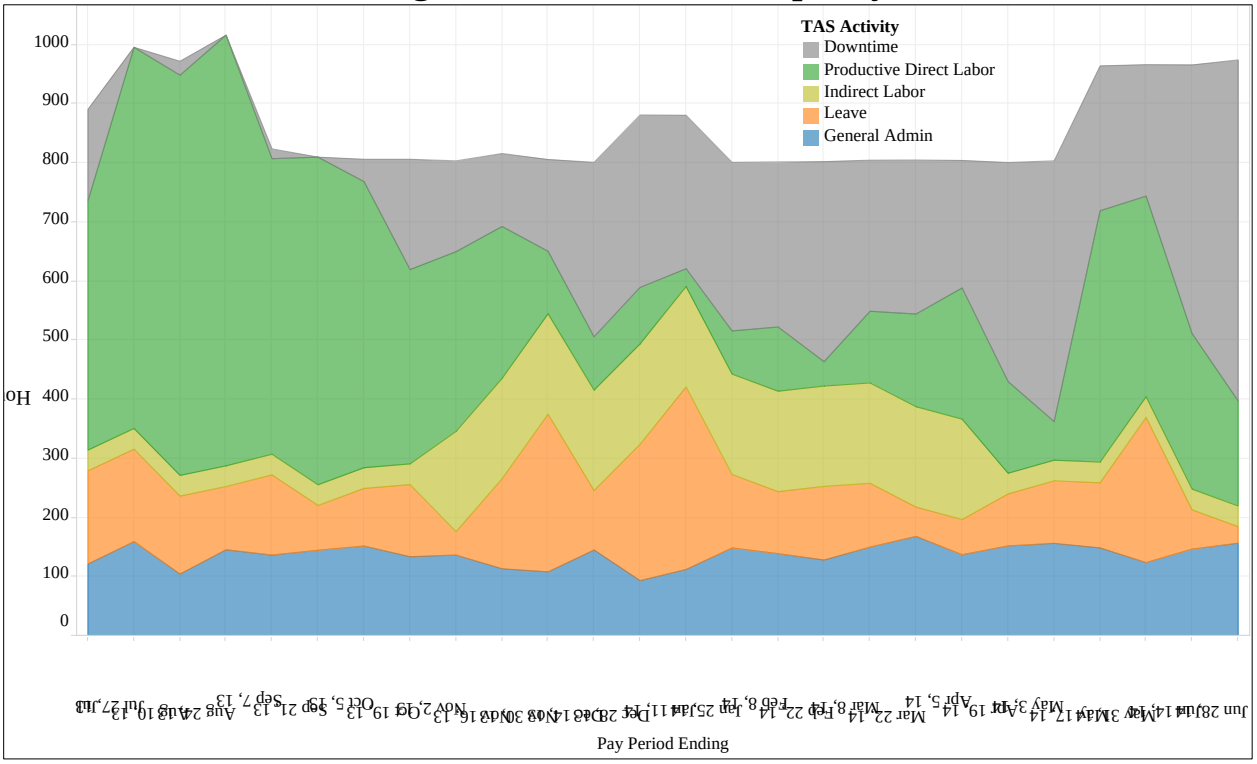
Source: OEPA and DES

As shown in **Table 2-8**, the Inorganic Section had 5,644.2 hours of excess capacity available in FY 2013-14, which was concentrated in the winter months.

productive pay periods. Because the rate used is an average of five periods, the actual experienced production rate in three of the pay periods exceeded the average. Rather than calculate negative values, analysis defaults to 0.0, which is justified based on the fact that the laboratory section actually did complete the full workload during those periods.

Chart 2-5 shows the breakdown between productive direct labor, indirect labor, and downtime in the Inorganic Section. These three components add up to the total amount of time that employees coded to Technical Analysis in TAS.

Chart 2-5: Inorganic Section Excess Capacity FY 2013-14



Source: OEPA and DES

As shown in **Chart 2-5**, the amount of downtime begins exceeding productive direct labor during the month of November, and remains in excess of productive direct labor until the Inorganic Section's peak season begins in May. There are a total of 5,644.2 hours of downtime shown in **Chart 2-5**.

Table 2-9 shows the methodology used to determine downtime in the Organic Section during FY 2013-14.

Table 2-9: Organic Section Downtime Identification FY 2013-14

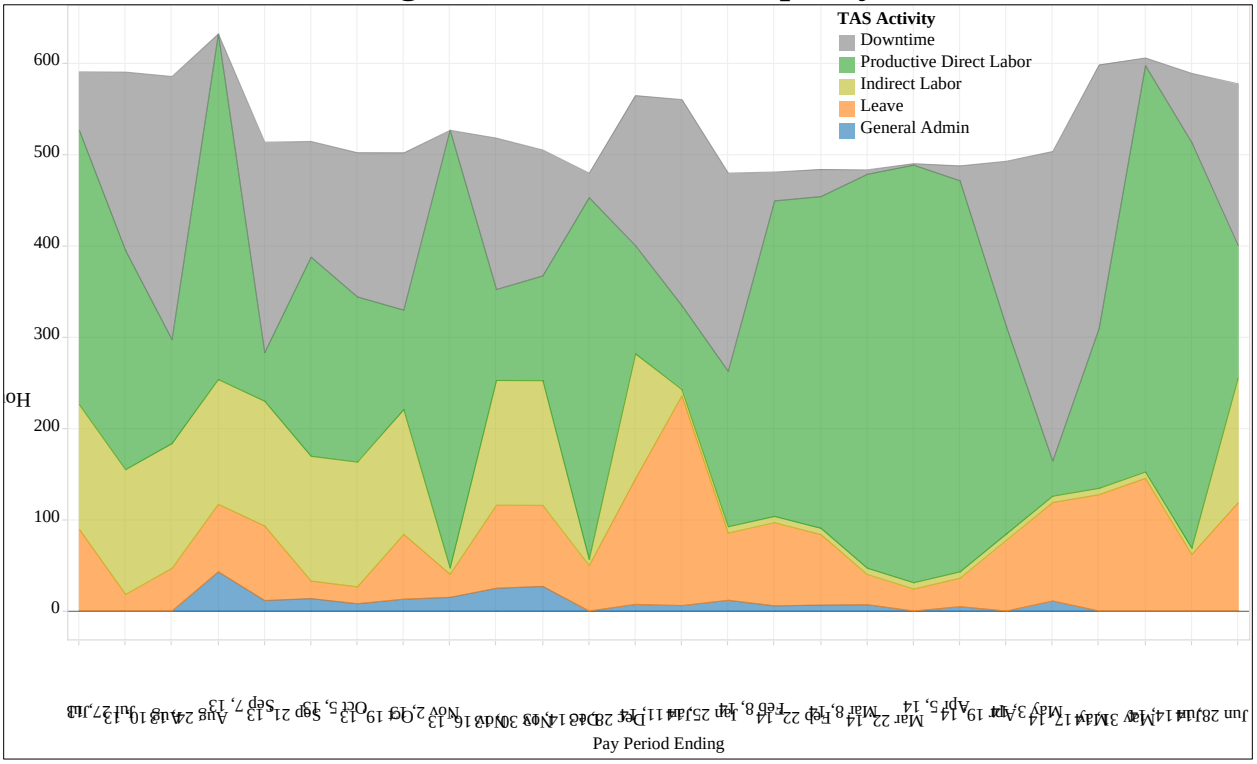
Pay Period Ending	Technical Analysis Hours	Indirect Labor Hours	Hours Available for Sample Analysis	Sample Output Volume	Labor Hours Required @ $120.05 Rate	Excess Capacity Hours
7/13/2013	501.5	136.8	364.7	$36,106.00	300.8	63.9
7/27/2013	572.6	136.8	435.8	$28,826.00	240.1	195.7
8/10/2013	539.2	136.8	402.4	$13,687.00	114.0	288.4
8/24/2013	471.0	136.8	334.2	$45,481.00	378.9	0.0
9/7/2013	420.8	136.8	284.0	$6,391.00	53.2	230.8
9/21/2013	481.9	136.8	345.1	$26,201.00	218.3	126.8
10/5/2013	475.9	136.8	339.1	$21,737.00	181.1	158.0
10/19/2013	418.2	136.8	281.4	$13,097.00	109.1	172.3
11/2/2013	455.3	6.9	448.4	$57,615.00	479.9	0.0
11/16/2013	402.4	136.8	265.6	$11,967.00	99.7	165.9
11/30/2013	389.6	136.8	252.8	$13,785.00	114.8	138.0
12/14/2013	430.3	6.9	423.4	$47,601.00	396.5	26.9
12/28/2013	419.9	136.8	283.1	$14,222.00	118.5	164.6
1/11/2014	324.8	6.9	317.9	$11,053.00	92.1	225.8
1/25/2014	394.6	6.9	387.7	$20,449.00	170.3	217.4
2/8/2014	384.5	6.9	377.6	$41,525.00	345.9	31.7
2/22/2014	400.2	6.9	393.3	$43,650.00	363.6	29.7
3/8/2014	443.7	6.9	436.8	$51,840.00	431.8	5.0
3/22/2014	466.3	6.9	459.4	$54,958.00	457.8	1.6
4/5/2014	452.0	6.9	445.1	$51,470.00	428.8	16.3
4/19/2014	415.6	6.9	408.7	$27,308.50	227.5	181.2
5/3/2014	384.8	6.9	377.9	$4,610.00	38.4	339.5
5/17/2014	471.0	6.9	464.1	$21,034.00	175.2	288.9
5/31/2014	460.8	6.9	453.9	$53,468.00	445.4	8.5
6/14/2014	527.4	6.9	520.5	$53,374.00	444.6	75.9
6/28/2014	459.2	136.8	322.4	$17,408.00	145.0	177.4
Total	**11,563.5**	**1,738.2**	**9,825.3**	**$788,863.50**	**6,571.3**	**3,330.2**

Source: OEPA and DES

As shown in **Table 2-9**, the Organic Section had 3,330.2 hours of excess capacity available in FY 2013-14. Unlike the Inorganic Section, the dynamic of a single peak and off-peak season is not apparent here. In contrast, the Organic Section shows instances of a pay period at near-peak capacity during all four quarters of the year.

Chart 2-6 shows the breakdown between productive direct labor, indirect labor, and downtime in the Organic Section. Again, these three components add up to the total amount of time that section employees coded to Technical Analysis in TAS.

Chart 2-6: Organic Section Excess Capacity FY 2013-14



Source: OEPA and DES

As shown in **Chart 2-6**, the Organic Section had significant periods of excess capacity over the course of the year. The pattern of downtime is less easily identified as having a peak-season and off-season in comparison with the Inorganic Section's downtime; however, the Organic Section generally has had more excess capacity during the period from June through October. There are a total of 3,330.2 hours of downtime shown in **Chart 2-6**.

Address Excess Capacity through More Efficient Labor Sourcing

When regular periods of seasonal workload are apparent, as is the case in the Inorganic Section and to a lesser extent in the Organic Section, the staffing of intermittent employees can produce efficiencies when combined with a reduction in full-time positions. Analysis quantifies the impact of intermittent staffing scenarios in both laboratory sections.

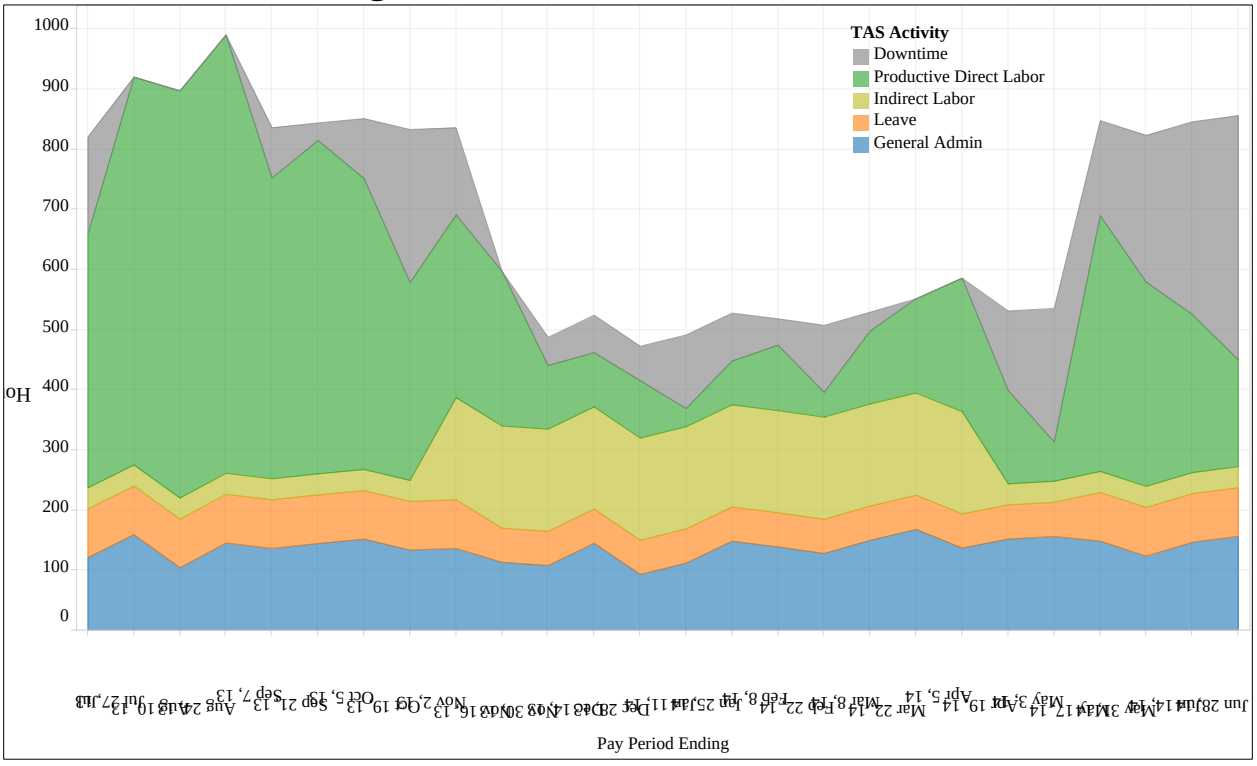
There is a 1,000-hour class of intermittent workers available for use by State agencies under the contract between the State of Ohio and the Ohio Civil Servants Employee Association (OCSEA). Employees in the intermittent class are temporary positions, not to exceed 1,000 hours in any fiscal year. Although intermittent positions are not currently used by DES, they are used in other divisions of OEPA.

The OCSEA contract stipulates that intermittent positions are hired at Step 1 of the appropriate pay range and that the positions are not eligible for step increases or longevity pay. For DES, these positions would be Laboratory Scientist 1, Laboratory Scientist 2, and Laboratory Scientist 3. The starting hourly rate for these positions is $17.22, $19.88, and $21.77, respectively. In the quantitative scenarios modeled in this analysis, the $19.88 rate was selected for intermittent compensation expense as it represents a conservative middle-ground. Intermittent employees are not entitled to any benefits, holiday, or leave pay, however they are considered "internal applicants" for the purposes of obtaining full-time employment with the State.

For the Inorganic Section, a scenario is modeled assuming 4.0 FTEs are replaced by 4.0 1,000-hour intermittent employees who work from the beginning of May through the end of October.[23] By substituting the hours of full-time staff for intermittent workers, and using the Inorganic Section's $213.78 revenue-per-hour production rate, a new breakdown of productive labor, indirect labor, and downtime can be calculated.

Chart 2-7 shows the distribution of activities and downtime under an intermittent scenario if the Inorganic Section would have utilized intermittent employees during FY 2013-14.

Chart 2-7: Inorganic Section Intermittent Scenario FY 2013-14



Source: DES

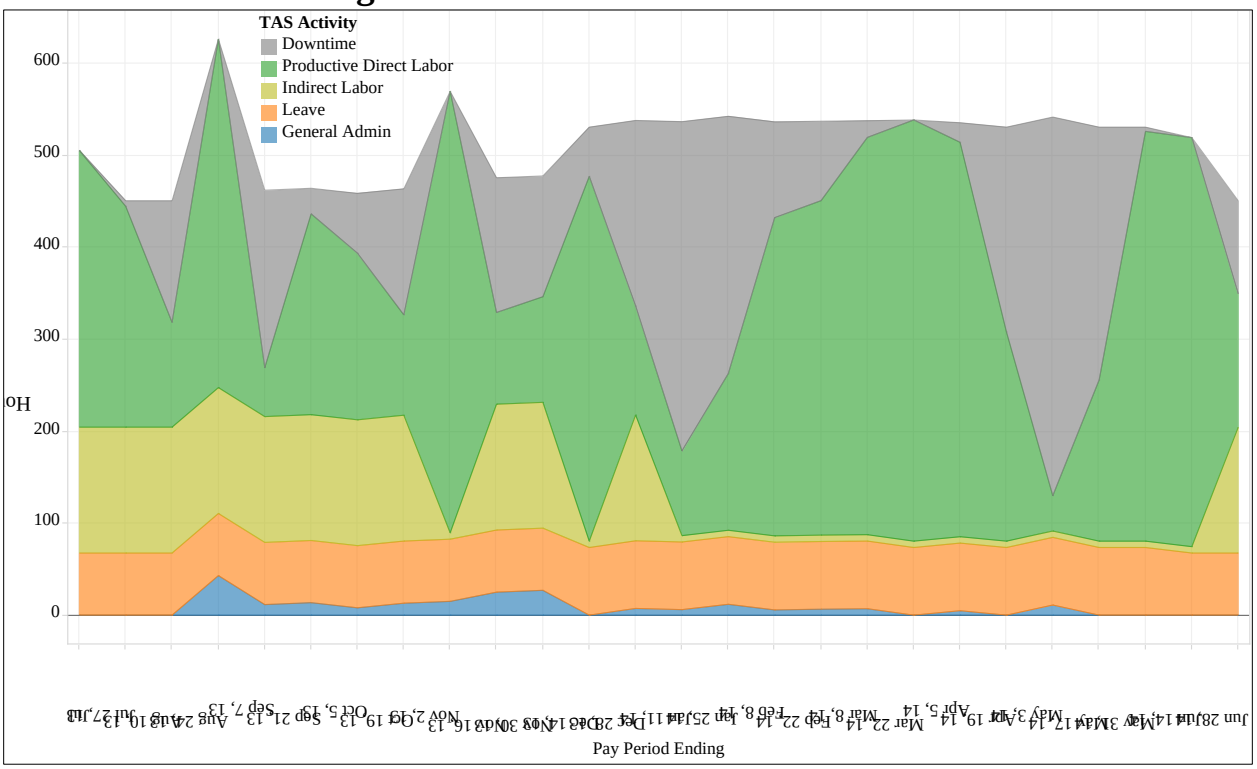
[23] The choice for modeling four intermittent employees was based on the determination that by removing any more than 4.0 FTEs, the Inorganic Section would have been unable to maintain required capacity to handle output in at least one non-peak season pay period.

As shown in **Chart 2-7**, the substitution of intermittent positions for full time positions would allow the Inorganic Section to reduce the total hours worked in the off-season without diminishing productive capacity. Since the start and end dates of the intermittent staff can be timed to avoid any work during the off-season, the net reduction in hours worked in the Inorganic Section is comprised almost entirely of downtime.

For the Organic Section, a scenario was modeled assuming 1.0 FTE is replaced by one 1,000-hour intermittent employee who works from the beginning of December through the end of May. This period of time is commensurate with the Organic Section's busiest months of the year.[24]

Chart 2-8 shows the distribution of activities and downtime under an intermittent scenario if the Organic Section would have utilized intermittent employees during FY 2013-14.

Chart 2-8: Organic Section Intermittent Scenario FY 2013-14



Source: DES

As shown in **Chart 2-8**, the substitution of intermittent labor for a full-time position eliminates a material amount of downtime in the off-peak months as compared to the actual operating results that were shown in **Chart 2-6**.

[24] The choice for modeling one intermittent employee was based on the determination that by removing any more than 1.0 FTE, the Organic Section would have been unable to maintain the required capacity to handle output in at least one non-peak season pay period.

The net financial impact resulting from operating the intermittent staffing scenarios is calculated by subtracting the cost of employing five intermittent staff from the savings generated by avoiding the cost of 5.0 FTEs. The average compensation of full-time employees in the Inorganic Section during FY 2013-14 was $80,444 including benefits, and the average compensation of full-time employees in the Organic Section was $79,131 including benefits. The intermittent staff working in both Inorganic and Organic Sections are assumed to earn $19.88 per hour, commensurate with the first step-rate for Laboratory Scientist 2 classification.

Table 2-10 summarizes operating efficiencies and financial impacts obtained by substituting intermittent staff for full-time employees within the Inorganic and Organic laboratory sections.

Table 2-10: Financial Impact from Intermittent Staffing Model

Inorganic Section			
	FY 2013-14 Actual	**Intermittent Scenario**	**Difference**
Full Time Employees	10.7	6.7	(4.0)
Intermittent Employees	0.0	4.0	4.0
Excess Capacity in Hours	**5,644**	**2,810**	**(2,834)**
Full-Time Compensation Cost [1]	$864,094	$524,706	($339,388)
Intermittent Compensation Cost	$0	$79,520	$79,520
Total Compensation	**$864,094**	**$604,226**	**($259,868)**
Organic Section			
	FY 2013-14 Actual	**Intermittent Scenario**	**Difference**
Full Time Employees	6.6	5.6	(1.0)
Intermittent Employees	0.0	1.0	1.0
Excess Capacity in Hours	**3,330**	**2,975**	**(355)**
Full-Time Compensation Cost [1]	$524,658	$455,274	($69,384)
Intermittent Compensation Cost	$0	$19,880	$19,880
Total Compensation	**$524,658**	**$475,154**	**($49,504)**
Total Savings from Intermittent Staffing Model			**($309,372)**

Source: OEPA, DES, and Ohio Hiring Management System
[1] Includes salary and benefits at OEPA's average rate of 38.1 percent.

As shown in **Table 2-10**, the intermittent scenario produces a cost savings of $259,869 in the Inorganic Section and a savings of $49,504 in the Organic Section for a combined financial impact of **$309,372**. In achieving the cost savings from an intermittent staffing model, the Inorganic Section will reduce its excess capacity, or downtime, by 50.2 percent and the Organic Section will reduce its downtime by 10.7 percent.

Address Remaining Excess Capacity through Fee-for-Service Work

For various reasons, including moderate unpredictability in workload and a desire to maintain production during periods with unanticipated staff reductions, it would be difficult to completely eliminate excess labor supply within the current seasonal demand for sample analyses. Even after fully operationalizing a model of intermittent labor, a material amount of measured downtime remains. After reducing downtime through the use of intermittent labor, 2,810 and 2,975 hours of excess capacity remains in the Inorganic and Organic Sections, respectively. An effort to mitigate this excess capacity through increasing sample output could strategically complement labor sourcing changes.

During the course of the audit, a promising opportunity for DES to earn fee-for-service revenue from outside customers was identified. The DES laboratory has the needed equipment and expertise to conduct sample analysis that OEPA terms "compliance testing" of public water systems (PWS). As part of the Federal Safe Drinking Water Act, PWS' are required to submit samples for periodic testing at certified labs. Currently in Ohio, the testing needs of PWS' are served by commercial labs, and in the case of some larger PWS', through certified in-house labs.

In an effort to quantify the opportunity size of earning outside revenue by conducting compliance testing for PWS', analysis considered the hours of downtime remaining in intermittent staffing scenarios in the Inorganic and Organic Section as the available pool of hours to run fee-for-service tests. Market pricing was obtained from a February 2015 survey conducted by DDAGW to document prices charged by seven commercial labs in Ohio for common types of required compliance tests.

To determine the throughput capacity of DES for the various types of tests analysis referenced the documentation underlying the development of the Division's existing price list. As part of the methodology used to set the price for DES tests, the Division estimated the amount of time required to conduct every type of analysis on the price list. Multiplying throughput estimates and the average market price per test for the common types of compliance tests results in a revenue-potential per hour specific to DES.

To account for the relative market size for each type of compliance test, and by extension the probable mix of business among the nine test types, an additional dataset was requested from DDAGW that provided the FY 2013-14 counts of compliance tests conducted in the Central Ohio region. Percentages generated from these counts were applied to the average surveyed market price of the nine tests, and a single weighted price for compliance testing was generated. **Table 2-11** shows the results of this estimation.

Table 2-11: Potential Revenue per Hour from PWS Compliance Testing

Test Type	Percent of Central OH Tests	Avg. Commercial Price per Test	DES Samples per Hour	DES Revenue Potential per Hour
Disinfection Bi-Products	4.2%	$66.3	1.0	$66.3
Inorganic Compounds	5.0%	$165.0	3.0	$495.0
Lead & Copper	4.9%	$25.5	5.0	$127.5
Semi-Volatile Organic Compounds	1.0%	$127.5	0.4	$51.0
Total Coliform	84.3%	$24.2	6.0	$145.2
Volatile Organic Compounds	0.6%	$113.8	1.0	$113.8
Weighted Average Revenue per Hour				**$157.4**

Source: DES and DDAGW

As shown in **Table 2-11**, DES has the potential to earn $157.4 per hour, assuming the three assumptions in this analysis hold true: DES can price at the average market rate, the tests-per-hour throughput estimates are accurate, and the types of tests ordered are in proportion to the percentages seen in Central Ohio.

The $157.4 hourly revenue rate is multiplied by the previous determination of downtime in the intermittent staffing scenarios to calculate the total financial impact of potential revenue arising from fee-for-service PWS compliance testing in the Inorganic and Organic Sections. **Table 2-12** shows the financial impact for both sections.

Table 2-12: Gross Revenue Potential from PWS Compliance Testing

	Inorganic Section		Organic Section	
	FY 2013-14 Actual	Intermittent Scenario	FY 2013-14 Actual	Intermittent Scenario
Excess Capacity of Available Hours	5,644	2,810	3,330	2,975
Potential Price per Hour		$157.4		$157.4
Potential Total Revenue Available		**$442,294**		**$468,265**

Source: DES and DDAGW

As shown in **Table 2-12**, the potential to generate a combined **$910,559** in revenue exists within the limited amount of excess capacity remaining after the Inorganic and Organic Sections implement intermittent staffing models.

Conclusion

DES laboratory sections, specifically the Inorganic and Organic Sections, experience substantial portions of the year where labor supply exceeds the actual customer service demand, resulting in underutilized staff. However, opportunities exist to both optimize the current labor supply, through use of intermittent staffing, and to productively address remaining excess capacity toward revenue generating activities. Furthermore, both improvements can be made without negatively impacting the laboratory's ability to meet the needs of its core customers.

Recommendation 2.1: OEPA should better match DES labor supply to seasonal demand by incorporating intermittent positions into the laboratory staffing plan in the following manner:

- **Inorganic Section – Replace four underutilized full-time employees with four 1,000-hour intermittent employees; and**
- **Organic Section – Replace one underutilized full-time employee with one 1,000-hour intermittent employee.**

Furthermore, the Agency should seek to maximize the utilization of any excess capacity by pursuing revenue-generating opportunities.

Financial Implication 2.1: OEPA can replace underutilized full-time employees with more fully utilized intermittent employees in the laboratory production sections and reduce personnel expense by a total of **$309,372** annually. Furthermore, fully utilizing available remaining capacity to capture fee-for-service work could result in additional revenue of **$910,559** annually. The net result of both changes is a total annual impact of **$1,219,931**.

Additional Consideration

Incorporating intermittent staff into laboratory operations and developing a pipeline of additional fee-for-service work may not be immediately achievable. For example, if OEPA chooses, the intermittent staffing model will need to be implemented over time as DES is able to replace permanent employees through attrition. Furthermore, intermittent staff are one available alternative to full-time employees, other options may include, but are not limited to: part-time permanent, temporary, and/or contract employees. The final determination of which position(s) to use should be based on the most efficient and effective solution to address the current imbalance. Finally, while the Division does currently conduct fee-for-service work when approached by potential customers there is no formal business development process in place. While this analysis identifies the full potential impact of these recommended actions, it is important to note that achieving this full impact could take a number of years.

3. Certified Professionals

Section Overview

This section focuses on the Ohio Environmental Protection Agency (OEPA), Division of Surface Water's (the Division), Permits and Compliance Section; specifically, the 401 Water Quality Certification and Isolated Wetland Permitting Unit (the Unit). Information was collected and analysis was performed to develop an operating profile of the Unit's application review function. Analysis identified opportunities to improve the review process by implementing a certified professional program and by more effectively recording and managing critical operational data. These initiatives should offer greater control over application quality and review timeliness.

The **Certified Professionals** section is divided into two sub-sections of analysis, each analyzing a distinct element of the Unit including:

- **Certified Professionals Cost/Benefit:** The first sub-section analyzes how the Unit could improve its review process through the use of a certified professionals (CP) model, similar to what is used by OEPA's Division of Environmental Response and Revitalization in the Voluntary Action Program (VAP).
- **Performance Measurement and Management:** The second sub-section analyzes the Unit's collection and use of important operational and workload data as well as necessary management information in comparison to leading practices.

As of the publication of this report, OEPA has proposed rule changes that will allow for the implementation of a CP program, if approved. Although this proposed rule, in current form, will not require the use of CPs, it does offer customers who use CPs the incentive of shorter application review durations.

Recommendations Overview

Recommendation 3.1: OEPA should implement and manage a certified professional program for the 401 Water Quality Certification and Isolated Wetland Permitting Unit with the goal of improving process efficiency and effectiveness.

Financial Implication 3.1: By implementing and managing a certified professional program for 401 Water Quality Certification and Isolated Wetland Permit applications, OEPA could reduce current process costs by $123,631 annually. This could be achieved through avoiding costs currently incurred due to initial poor application quality as well as duplicative field reviews during the technical review process. When adjusting for the annual cost to administer a CP program at $110,512, the net saving is **$13,119** annually.

Recommendation 3.2: OEPA should gather, analyze, and communicate key 401 Water Quality Certification and Isolated Wetland Permitting Unit data to ensure that the application review process is conducted in a cost effective and timely manner.

Financial Implication 3.2: N/A

Section Background

The Division's mission is to "protect, enhance and restore all waters of the state for the health, safety and welfare of present and future generations." One way that the Division carries out the mission is through the work performed by the Unit; specifically, its role in managing the application, review, and permitting process for the 401 Water Quality Certification (WQC) and Isolated Wetland Permit (IWP).

Both WQC and IWP[25] were originally administered by the State under federal authority from the Clean Water Act of 1977 (CWA) and both deal with allowable adverse impact on waterways and wetlands, respectively.[26] Because the WQC is still administered under the CWA, joint authority has also been granted to the United States Army Corp of Engineers (USACE). Both a WQC and a USACE 404 permit are required for applicable waterway projects.[27]

Ohio's WQC program was formally established in 1982 under Ohio Administrative Code (OAC) Chapter 3745-32: Attainment and Protection of Surface Water Quality Standards. In accordance with this rule, an OEPA-granted WQC is required for any project that may result in the discharge of dredged or fill materials into US waters, regardless of whether the discharge occurs on private or public property. Any client entity seeking to engage in a project that meets this rule condition is required to submit an application to the Unit explaining the extent of the resulting adverse waterway impact as well as a plan to mitigate the adverse impact in accordance with applicable laws and regulations.[28]

Ohio's IWP program was formally established in 2001 with the signing of House Bill 231. The IWP was developed in response to a US Supreme Court ruling that the USACE did not have jurisdiction to regulate isolated wetlands under Section 404 of the CWA. As a result, Ohio Revised Code (ORC) § 6111.02 was signed into law granting OEPA the authority to oversee projects impacting isolated wetlands and to issue the IWP.

[25] The terms WQC and IWP are inclusive of the process, application, and permit throughout this report. Where appropriate, these three terms have been added to clarify the focus of the discussion.

[26] Although the IWP was originally authorized by CWA, as a part of the WQC, a US Supreme Court ruling in 2001 differentiated authority over waterways from isolated wetlands and invalidated CWA's applicability to isolated wetlands.

[27] The 404 permit is issued by the USACE and is the federal equivalent of the state WQC. The 404 permit helps to ensure that projects are in compliance with federal water quality standards as well as state-specific standards.

[28] Accounting for projects that are similar in nature and cause minimal degradation to waters of the state, the USACE has implemented a 404 Nationwide Permit that can be used for minimally impactful projects. In response, OEPA has issued a general WQC for some sections of the 404 Nationwide Permit due to Ohio requiring greater water quality standards than federal requirements resulting in some project types not being eligible. Projects ineligible for the general WQC must obtain an individual WQC. Due to minimal workload for projects that meet general WQC requirements, this analysis only focuses on WQCs that received individual certifications.

Table 3-1 shows the distribution of total WQC and IWP applications by action taken for the last three complete years, CY 2012 to CY 2014. The Unit receives and reviews applications and issues final decisions (i.e., takes action) regarding the authorization or denial of the proposed project.

Table 3-1: WQC and IWP Application Actions CY 2012 to CY 2014

WQC Applications		
Action Taken	**Total Count**	**Percent of Total Applications**
Granted	143	36.8%
Director Authorized [1]	54	13.9%
Withdrawn	28	7.2%
Denied	6	1.5%
Waived [2]	5	1.3%
Total 401 WQC Applications	**236**	**60.7%**
IWP Applications		
Action Taken	**Total Count**	**Percent of Total Applications**
Granted	138	35.5%
Withdrawn	15	3.8%
Total of IWP Applications	**153**	**39.3%**
Total WQC and IWP Applications	**389**	**100.0%**

Source: OEPA

[1] Director authorized indicates that applications were granted approval to forego the WQC and simply be considered under the USACE's 404 permitting process. These applications are typically for projects that marginally exceeds the threshold for adverse impact which otherwise would require a WQC in addition to the 404 permit.

[2] Waived refers to projects where OEPA neither granted nor denied the WQC application within the allowable timeframe. In these cases, OEPA no longer had jurisdiction and the authority to approve or deny the application reverted solely to the USACE as a 404 permit.

As shown in **Table 3-1**, the Unit reviewed 389 total applications during the period shown, an average of 130 applications per year. In total, 72.3 percent were granted: 36.8 percent being WQCs and 35.5 percent being IWPs. The remaining applications were either director authorized, withdrawn, denied, or waived.

Table 3-2 shows the number and percent distribution of applications by industry type for the last three complete years, CY 2012 to CY 2014.

Table 3-2: Applicant Industry Types CY 2012 to CY 2014

Applicant Industry Type	Count of Applications	Percent of Total Applications
Transportation	68	17.5%
Commercial	59	15.1%
Residential	51	13.1%
Industrial	38	9.8%
Oil and Gas	38	9.8%
Mining	35	9.0%
Local Government	22	5.6%
Groups [1]	21	5.4%
Maintenance Dredging	18	4.6%
Landfill	9	2.3%
Utility	5	1.3%
USACE	3	0.8%
Higher Education	3	0.8%
K12 Education	3	0.8%
Other	16	4.1%
Total of Application	**389**	**100.0%**

Source: OEPA

[1] Groups includes multiple individual parties that submit a single application. These are typically, non-profits, churches, living trusts, etc.

As shown in **Table 3-2**, the types of applicants that submit WQCs and IWPs vary widely, although several industries are more frequently represented than others. Specifically, transportation, commercial, residential, industrial, oil and gas, and mining applicants represented 74.3 percent of all applications. These categories generally include projects for the following purposes:

- Transportation – Maintenance or construction of roadways;
- Commercial – Construction of buildings or other structures for commercial use;
- Residential – Construction of residential homes;
- Industrial – Construction of manufacturing buildings;
- Oil and Gas – Extraction, transportation, or processing of oil and gas; and
- Mining – Extraction, transportation, or processing of coal.

Further, although some of the industries and applicants may have environmental engineering and management expertise, very few are dealing directly with environmental matters as a day-to-day business focus. As a result, the majority of applicants contract with environmental consultants to complete the required WQC and IWP application adverse impact assessments and mitigation plans.

The **Certified Professionals** section is divided into two sub-sections of analysis, each analyzing a distinct element of the Unit including:

- **Certified Professionals Cost/Benefit:** The first sub-section analyzes how the Unit could improve its review process through the use of a CP model, similar to what is used by OEPA's Division of Environmental Response and Revitalization in the VAP.
- **Performance Measurement and Management:** The second sub-section analyzes the Unit's collection and use of important operational and workload data as well as necessary management information in comparison to leading practices.

R3.1 Certified Professionals Cost/Benefit

Background

WQC and IWP applications are commonly completed and submitted with the assistance of environmental consultants. These consultants provide site examinations and lab work required to prepare adverse impact assessments and mitigation plans which are required to accompany the applications. Currently, OAC Chapter 3745-32: Section 401 Water Quality Certifications does not require or provide authority for applicants and consultants to either work with, or receive oversight from, OEPA during the application development process. Further, these rules contain no requirements regarding the education levels, past experience, or organizational certifications for the environmental consultants or any other industry professionals who prepare the applications and accompanying technical documents.

Once the Unit receives an application, it has a maximum of 15 days to review the application for completeness and respond to the applicant per ORC § 6111.30. A review for completeness is not an approval of the application, but merely an acknowledgement that the application has been properly completed and includes the required accompanying documents and therefore can be moved along to technical review for approval or denial. If the application has been accepted for technical review, it is considered complete. Incomplete applications are typically revised and resubmitted, often several times before being considered complete by Unit staff and ready for technical review.

As noted, once an application is considered complete, it undergoes a technical review which examines the proposed project, including the types of waterways or wetlands adversely affected and the anticipated mitigating actions by the applicant to avoid or minimize adverse impacts. The Unit reviews each element of the application, which sometimes includes field visits and testing to independently assess the extent of the adverse impact represented in the application. Upon completing the technical review, the Unit determines whether the project is accepted or denied and the applicant is notified of the decision.

Methodology

This sub-section, **Certified Professionals Cost/Benefit**, seeks to assess and evaluate the current administration of the WQC and IWP with a focus on identifying opportunities for improved efficiency and effectiveness. During the planning and scoping phase of this performance audit, OEPA leadership identified that consideration had been given to requiring the use of certified professionals (CPs) to complete the WQC and IWP application. This would likely emulate the Voluntary Action Program (VAP) model already in place in OEPA and widely recognized as successful by leadership and industry partners. OEPA leadership requested an independent evaluation of the financial and process impact associated with moving from the current state to a VAP-style CP model.

OEPA, the Division, and the Unit provided current and historical baseline data including application quantities, staffing, and time allocation. Sources of data include the Ohio Administrative Knowledge System (OAKS) and the Surface Water Information Management System (SWIMS). Data points used were from CY 2012 to CY 2014 as these were the last three complete years of data available at the time that this analysis was completed. Where necessary, Division and Unit staff provided additional insight to identify time allocated to various functions. In all cases requiring clarification, staffing time and material allocations associated with the WQC and IWP process were addressed through the inclusion of centrally held information or were supplemented by testimonial, or documentary, evidence from knowledgeable Division and Unit staff. It should be noted that in many cases, basic workload and effort information associated with the Unit's application and technical review processes was not being collected in an organized manner that would be accessible and useful to OEPA, Division, and Unit leadership. See **R3.2 Performance Measurement and Management** for further detail on identified weaknesses.

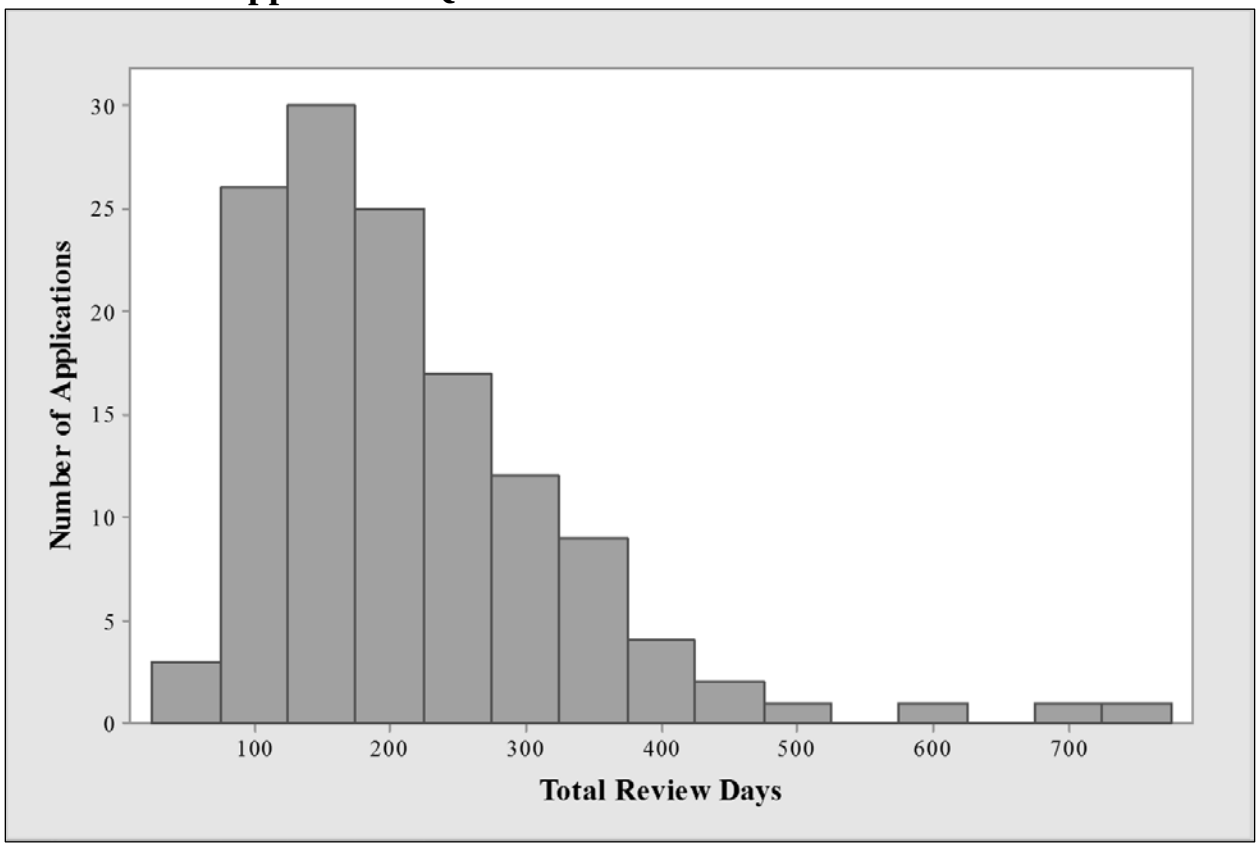
The analysis first examines review duration and timeliness, two factors that are widely recognized by OEPA leadership and Division and Unit staff as indicators of process concerns. The analysis then focuses on completeness as a measure of initial quality. Finally, the analysis models the cost of administering a CP program and assesses the process and financial impacts of doing so relative to a continuation of the current state.

Analysis

Application Review Duration

Chart 3-1 shows the total review duration, in days, for all WQC applications that were approved by the Unit for the last three complete years, CY 2012 to CY 2014. This data provides insight into the delay an applicant may experience associated with starting a project that is ultimately approved. For the purpose of this analysis, total review duration is defined as the number of days from the date the initial application was received, to the date on which the application was formally approved; inclusive of both the application completeness and technical review phases.

Chart 3-1: Approved WQC Total Review Durations CY 2012 to CY 2014



Source: OEPA

As shown in **Chart 3-1**, the peak of the distribution of total review durations was between 100 and 200 days; however, reviews did frequently exceed 200 days. The median review duration was 185.5 days, with the shortest review being 56 days and the longest being 737 days. As noted, these review durations are cumulative of the application completeness review and technical review. The median technical review duration was 121.5 days while the median application completeness review, encompassing all initial and resubmitted applications, was 64.0 days. Given that each individual application submission's completeness review is governed by a limit of 15 business days, a maximum of 19 total days accounting for weekends (i.e., non-business days), the median application completeness review duration could have been decreased by at

least 45.0 days, or 76.6 percent if all applications been submitted complete the first time. A commensurate 45.0 day reduction in median total review duration, from 185.5 days to 140.5 days, would represent a 24.3 percent decrease in total duration.

This initial application completeness review delay, aside from the potential negative industry impact through extended project/development wait times and uncertainty, often restricts the Unit's ability to make timely decisions. In accordance with the CWA and ORC § 6111.30, timely decisions are a matter of regulatory authority. For example, failure to reach a decision on a complete application within an allotted period of time, and without receiving an extension from USACE, may result in Ohio losing jurisdiction over the WQC or IWP in question.

Table 3-3 shows the frequency of applications extending beyond regulatory timeframes (i.e., CWA and/or ORC) for the last three complete years, CY 2012 to CY 2014. The measuring points for allowable review days are different for the CWA and ORC. The CWA starts with the USACE "public notice" date and ends with the date the final decision is rendered. In contrast, ORC starts with the date the application is considered complete and ends with the date the final decision is rendered.

Table 3-3: Cumulative Untimely Reviews CY 2012 to CY 2014

Review Type	Regulatory Source	Review Days Allocated	Untimely Reviews [1]
WQC	CWA	365	16
WQC	ORC	180	15
IWP Level 1	ORC	30	2
IWP Level 2	ORC	90	5
IWP Level 3	ORC	180	0
Total Reviews Beyond Regulatory Timeframes [2]			**36**
Total Number of Reviews			389
Percent of Total Reviews Beyond Regulatory Timeframe			**9.3%**

Source: OEPA

Note: IWP levels correspond to the quality and size, in acres, of the proposed permit site with Level 1 generally being the smallest and Level 3 being the largest.

[1] Extensions are sometimes granted by the USACE in accordance with the CWA. Reviews that received these extensions are likely included in this analysis. However, specific reviews that received extensions were unable to be identified as Unit staff do not have readily available access to the information.

[2] Two WQC reviews exceeded both the CWA and ORC regulatory timeframes. The total has been adjusted to avoid double-counting these two reviews.

As shown in **Table 3-3**, a total of 36 or 9.3 percent of all reviews extended beyond regulatory timeframes over the three-year period. Although the CWA and ORC measure untimely differently, both reflect concerns regarding the ability to consistently meet regulatory timeframes. Further, as previously noted, any WQC project that exceeded this timeline poses concerns for OEPA, as 5 of the 16 WQCs that continued beyond the CWA requirement were waived by either the USACE or the applicant after exceeding 365 days. These waived applications eliminate OEPA's jurisdiction over the project and hamper its ability to minimize the degradation of water quality from the associated project. Although these five projects were still bound by federal requirements, OEPA lost its ability to issue a decision on the application based upon Ohio's more rigorous water quality standards.

Application Completeness Review

When WQC applications are initially submitted to OEPA, the Unit conducts a completeness review of the application. ORC § 6111.30 outlines 11 specific items that are necessary for the application to be considered complete including:

- Application;
- Jurisdictional determination letter;
- Wetland characterization;
- Use attainability analysis;
- Mitigation plan;
- Permit fees;
- Site photographs;
- Critical habitat documentation;
- Alternatives analysis;
- Delineation report; and
- USACE public notice.

These items must be completed prior to OEPA's review and require considerable work on behalf of the applicants. For example, completing environmental studies and assessing adverse impact as well as contacting the following three agencies: the USACE, the Ohio Department of Natural Resources, and the United States Fish and Wildlife Service. Failure to complete these items correctly or in a timely manner has negative results for the applicant and the Unit. For the applicant, the application will be determined to be incomplete and will have to be resubmitted after re-work is done to address the initial deficiency. For the Unit, incomplete applications represent avoidable time spent on defective work leading to re-work.

Table 3-4 shows the number of WQC applications considered complete as initially received and upon resubmission, in addition to the quantity of applications that were never considered complete for the last three years, CY 2012 to CY 2014.

Table 3-4: WQC Application Completeness Review CY 2012 to CY 2014

Initial Completeness Review	Application Count	Percent of Total
Initial Applications Received [1]	182	N/A
• Received Complete	29	15.9%
• **Received Incomplete**	**153**	**84.1%**
Resubmitted Completeness Review	**Application Count**	**Percent of Total**
Resubmitted Applications Received	153	N/A
• Received Complete	126	82.4%
• **Received Incomplete**	**27**	**17.6%**
Total Processed Applications	**Application Count**	**Percent of Total**
Total Complete Applications	**155**	**85.2%**
Total Incomplete Applications	**27**	**14.8%**

Source: OEPA
[1] Excludes director authorized applications.

As shown in **Table 3-4**, only 15.9 percent of WQC applications were considered complete upon initial submission and review by the Unit. The remaining 84.1 percent of applications were identified as incomplete and the applicant was notified of the deficiency and afforded an opportunity to resubmit the application. If the applicant chooses to resubmit, the Unit's completeness review is repeated. This process may be repeated several times if the application remains incomplete and the applicant continues to resubmit. The Unit does not collect any data other than whether or not the application is considered complete. The Unit has no quantification of the number of resubmitted applications or the re-work associated with poor initial quality (see **R3.2 Performance Measurement and Management**).[29] As shown in **Table 3-4**, of applications that were resubmitted, 82.4 percent were eventually considered complete. In total, 85.2 percent of all WQC applications were initially or eventually determined to be complete while the remaining 14.8 percent were never considered complete, and were withdrawn by the applicant.

Table 3-5 shows the number of IWP applications considered complete as initially received and upon resubmission, in addition to the quantity of applications that were never considered complete for the last three complete years, CY 2012 to CY 2014. IWP applications are reviewed using the same set of requirements as the WQC, with the exception of the critical habitat and USACE public notice documentation.

Table 3-5: IWP Application Completeness Review CY 2012 to CY 2014

Initial Completeness Review	Application Count	Percent of Total
Initial Applications Received	153	N/A
• Received Complete	53	34.6%
• **Received Incomplete**	**100**	**65.4%**
Resubmitted Completeness Review	**Application Count**	**Percent of Total**
Resubmitted Applications Received	100	N/A
• Received Complete	87	87.0%
• **Received Incomplete**	**13**	**13.0%**
Total Processed Applications	**Application Count**	**Percent of Total**
Total Complete Applications	**140**	**91.5%**
Total Incomplete Applications	**13**	**8.5%**

Source: OEPA

As shown in **Table 3-5**, only 34.6 percent of IWP applications were considered complete upon initial submission and review by the Unit. IWP applications that are not initially determined to be complete follow the same re-review path as discussed with WQC applications. Of applications that were resubmitted, 87.0 percent were eventually considered complete. In total, 91.5 percent of IWP applications were initially or eventually determined to be complete while the remaining 8.5 percent were never considered complete, and were withdrawn by the applicant.

[29] Unit staff estimated that a single application can take as many as 11 resubmittals before being accepted as complete, but data on this is not currently collected or analyzed by Unit staff or management.

Table 3-4 and **Table 3-5** collectively show that applications of both types are frequently submitted as incomplete. In addition, 27 WQC and 13 IWP applications that were submitted to OEPA at least once were never considered complete and were withdrawn by the applicants. This suggests that as many as 40 applications, not including those that are denied on technical grounds later in the process, should have never been submitted, and resulted in wasted applicant time and Unit labor reviewing applications that never qualified for actual technical review.

Overview of the VAP

The Voluntary Action Program (VAP) has been in use by the Division of Environmental Response and Revitalization (DERR) since 1994. The purpose of the program is to allow private individuals/businesses to voluntarily remediate contaminated properties in a controlled manner with oversight from OEPA. If the applicant successfully completes remediation in accordance with the agreed-upon action plan, a "No Further Action" letter will be approved through the VAP. If approved, OEPA will issue a covenant not to sue, which promises the volunteer that the State will not require further investigation or cleanup of the property.

A key feature of the VAP is the use of CPs. These are individuals and laboratories that are certified based on qualifications and guidelines administered by DERR. CPs, approved by DERR, are able to work with applicants to complete the technical reviews necessary to assess the site and determine a proper remediation plan.[30] Once complete, the application materials are reviewed by DERR and, similar to WQC and IWP, after an initial completeness review, undergo a technical review and are then approved or denied. Unlike the WQC and IWP technical review process, DERR staff does not conduct independent assessment and/or field reviews and testing because CPs are already trained and certified on the appropriate, required methodologies and procedures.

Furthermore, given that trained CPs are conducting the analysis and assisting with applications, the VAP has experienced a much higher degree of initial application quality which allows DERR reviews to be completed with less total effort and in a timely manner. For example, DERR identified that only one incomplete application per year, on average, was received during the last three complete years, CY 2012 to CY 2014. Given an annual average of 45 application reviews completed, this yielded an initial completeness rate of 97.8 percent. Further, any application received incomplete was remedied quickly, typically within three days of DERR notifying the CP; resulting in 100 percent completeness approval of all applications.

In order to ensure the effectiveness of the VAP, while maintaining oversight of CPs, DERR has a training and auditing function in place. Historically, when CP deficiencies have been identified, they have resulted in updates to training for new and renewing CPs. However, DERR also has the ability to revoke an individual's certification if an audit finding is serious enough.

[30] While environmental consultants under the WQC and IWP process are actively involved in the application process, in order to minimize the cost of contracted labor associated with application administration, some aspects of the application, including the actual submission to OEPA, are typically done by the applicant.

Potential to Model the VAP

Historically, the Unit has been unable to control the intake process, resulting in a high frequency of incomplete or inaccurate initial applications. By implementing and managing a CP program, including a training and audit function, the Unit has the opportunity to make better informed management decisions to improve the efficiency and effectiveness of the WQC and IWP review process. The identification and effective management of educational training areas to certified professionals could offer greater control over the completeness and overall quality of applications received. By not engaging in actions that improve the application review process, the Unit is currently faced with reviewing incomplete and poor quality applications multiple times. By taking actions that improve the initial quality of applications, OEPA could improve the efficiency and effectiveness of the review function, resulting in an estimated savings of $60,283 annually. This calculation is based on WQC and IWP re-review task hours (12 hours per occurrence), the number of avoidable re-reviews per year (116 total occurrences equaling 1,392 labor hours), and the average hourly rate with benefits ($40.87 per hour) of Unit staff completing the reviews.[31] The calculation also includes an additional avoidance of 83 initial review labor hours associated with the elimination of applications that would never even have been considered for technical review.

In addition to lengthy completeness reviews, additional Unit time is spent in the field verifying application data. For instance, a key component of the application is a compilation of various water quality evaluations, including the Ohio Rapid Assessment Method, Headwater Habitat Evaluation Index, Qualitative Habitat Evaluation Index, and Headwater Macroinvertebrate Field Evaluation Index. These evaluations can impact the Unit's technical decision-making and are often independently re-evaluated by Unit and Division staff. Some of these field re-evaluations are performed because evaluations included in the application are close to threshold limits for wetlands classifications and are checked for accuracy. Other re-evaluations are conducted due to historically unreliable applicants or environmental consultants. VAP field visits are limited to audit and follow-up work, unless a visit is specifically requested by the CP completing the application. Although the Unit believes that these re-evaluations are necessary under the current process, they are inherently duplicating work at an estimated cost of $63,348 annually. This calculation is based on average annual motor pool costs of $9,152, average total Unit staff labor hours (1,236.29 hours at the average hourly rate with benefits of $40.87 per hour), and average total Division specialist labor hours (92.55 hours at the average hourly rate with benefits of $39.65 per hour).

Finally, in order to implement a CP program model based on the VAP, a training and audit function is necessary to ensure oversight and quality. Although the overall market size of future CPs is unknown and the need would scale based on actual workload, a baseline assumption is a workload similar to that of the VAP. Under the VAP, these tasks are split across multiple staff and, in aggregate, equal a staffing effort of 1.3 full-time employees (FTEs). Similar to the VAP, these duties are likely to be completely, or at least partially, absorbed by current staffing. This is partially made possible through the already identified efficiency gains from improved initial application quality and avoided re-evaluations. However, the initial additional cost of operating

[31] Each re-review is assumed to occur only once given that no data exists to quantify exactly how many re-reviews currently occur.

the program, without accounting for offsetting efficiencies is $110,512. This calculation is based on total hours for 1.3 FTEs (2,080 hours per FTE or 2,704 total hours) multiplied by the average hourly rate with benefits ($40.87 per hour) of Unit staff.

Table 3-6 shows identified annual savings and costs associated with the implementation of a CP program for WQC and IWP.

Table 3-6: OEPA Financial Impact of CP Program

Functional Area	Annual Savings/(Cost)
Cost of Incomplete Applications	$60,283
Cost of Field Visits in Support of Applications	$63,348
Total Cost Savings from Efficiency Improvements	**$123,631**
Cost to Administer and Audit CP Program	**($110,512)**
Net Annual Savings from CP Program Implementation	**$13,119**

Source: OEPA and OPT analysis

As shown in **Table 3-6**, by obtaining an application completeness rate similar to what has been identified with the VAP, the Unit could realize $60,283 per year in efficiency gains. Further, by having trained and qualified certified professionals conducting site evaluations, eliminating the need for Unit field visits and re-evaluations prior to or during the application process, the Unit could realize an additional $63,348 per year in reduced travel and labor expenses. When adjusting for the cost to administer and audit a CP program, the Unit would realize a net **$13,119** per year in savings. However, the most significant benefit will be in decreasing the overall review duration, by at least 24.3 percent just accounting for improvements to initial application completeness, but likely understating significant gains in the technical review process due to overall higher quality and reliability of the work performed.

Conclusion

The current WQC and IWP review process is severely hampered by the lack of initial quality and completeness of applications. Poor quality results in duplication of effort by Unit staff and delays in the review process. As a result, reviews can extend beyond CWA and ORC regulatory timeframes, and result in waived OEPA oversight for projects impacting Ohio waters. Emulation of the VAP in using CPs could provide significant benefit to OEPA, its industry customers, and its stakeholders.

Recommendation 3.1: OEPA should implement and manage a certified professional program for the 401 Water Quality Certification and Isolated Wetland Permitting Unit with the goal of improving process efficiency and effectiveness.

Financial Implication 3.1: By implementing and managing a certified professional program for 401 Water Quality Certification and Isolated Wetland Permit applications, OEPA could reduce current process costs by $123,631 annually. This could be achieved through avoiding costs currently incurred due to initial poor application quality as well as duplicative field reviews during the technical review process. When adjusting for the annual cost to administer a CP program at $110,512, the net saving is **$13,119** annually.

Additional Consideration

This recommended action was developed taking into account that OEPA's administration of the IWP and WQC is governed by federal and State requirements. Although there may be opportunities for marginal process improvement by incrementally improving the application and technical review processes there are certain portions of both processes that are not within the Agency's authority to control. As such, moving to a CP model represents the most directly achievable option for increasing the efficiency and effectiveness of the IWP and WQC programs.

R3.2 Performance Measurement and Management

Background

OEPA does not fully realize opportunities to use WQC and IWP data to make more informed management decisions regarding staffing workload and effort. Furthermore, key information that would be informative to leadership's understanding of the current WQC and IWP application completeness reviews and technical reviews is not being systematically captured.

Methodology

This sub-section, **Performance Measurement and Management**, seeks to highlight performance, workload, and process data and information concerns identified during the evaluation of the potential efficiencies associated with a CP program (see **R3.1 Certified Professionals Cost/Benefit**). In seeking data associated with WQC and IWP review, unit staff identified multiple areas where data was not recorded and therefore was unavailable, or at minimum, not readily available. Data for this section was obtained primarily by SWIMS and OEPA's time accounting system and supplemented by testimonial, or documentary, evidence from knowledgeable Unit staff for the last three years including CY 2012 to CY 2014.

Analysis

The Unit does not have a systematic method in place to track key data associated with the WQC and IWP application process. Although SWIMS is used to record several data points associated with applications, including some dates and final actions taken per application, other data useful to Division management has not been tracked. These areas include:

- Time and cost associated with field work;
- Time and cost associated with completeness reviews; and
- Frequency of, and reason for, completeness review returns.

A Performance Management Framework for State and Local Government: From Measurement and Reporting to Management and Improving (National Performance Management Advisory Commission, 2010) notes that "performance management has the potential to help governments address the performance challenges they face by focusing organization resources and efforts toward achieving results that will provide the greatest benefit to its stakeholders".[32] This includes making management decisions based upon reliable and relevant data, meaning that by continuously monitoring key performance indicators within the organization, management may be able to adjust variable resources while providing services to the public and maximizing potential impact.

[32] The National Performance Management Advisory Commission (NPMAC) includes, but is not limited to, organizations such as the National Association of State Budget Officers, Government Finance Officers Association, National Association of State Auditors, Comptrollers, and Treasurers, and the National Conference of State Legislatures. NPMAC has "developed a conceptual performance management framework to help governments move beyond measuring and reporting those measures to managing performance toward improved results."

At the end of CY 2014, Division management changed, resulting in an increased focus on the efficiency and effectiveness of the WQC and IWP review process. Division management, as a part of this focus, has begun to identify data and information collection opportunities to better inform decision making. By recording and monitoring operational data, OEPA and Division leadership will be better able to make informed management decisions to improve the efficiency and effectiveness of Unit functions.

Conclusion

OEPA does not currently collect critical data and information that is important to managing the WQC and IWP processes. Furthermore, where key data and information is collected, it is generally not easily accessible and visible to Division management. As such, Division management is at a disadvantage in its efforts to improve the efficiency and effectiveness of operational areas such as the WQC and IWP processes.

Recommendation 3.2: OEPA should gather, analyze, and communicate key 401 Water Quality Certification and Isolated Wetland Permitting Unit data to ensure that the application review process is conducted in a cost effective and timely manner.

Financial Implication 3.2: N/A

4. Solid Waste Operator Certification

Section Overview

This section focuses on the Ohio Environmental Protection Agency's (OEPA or the Agency) implementation of operator certification programs for construction and demolition debris (C&DD) and solid waste operators. As these programs have yet to be implemented, information was collected and analysis was performed to develop models for the purpose of assessing the cost that OEPA would incur to set-up and operate the program under scenarios based on an Agency Model and industry models.[33] Analysis identified opportunities to deliver program services more efficiently through a partnership with industry that respects industry knowledge and experience as well as the Agency's role in overseeing the industry.

Recommendation Overview

Recommendation 4.1: OEPA should implement solid waste and construction and demolition debris operator certification programs in accordance with Ohio Revised Code requirements. In doing so, the Agency should adopt a collaborative industry oversight model. This model will allow the Agency to retain reasonable oversight and control over content and standards while leveraging industry knowledge and partnership to administer the program in a cost-efficient manner.

Financial Implication 4.1: By analyzing and implementing identified opportunities for more efficient and effective enactment of solid waste and C&DD operator certification programs, OEPA can ensure that resources are allocated towards mission-critical functions. Adopting an Oversight Model for the C&DD operator certification program over an Agency Model could net cost savings of $52,806 on initial program startup costs and $28,704 in annual costs. Adopting an Oversight Model for the solid waste operator certification program over an Agency Model could net cost savings of $159,558 on initial program startup costs and $121,756 in annual costs. This program model would save the Agency **$212,364** on initial program startup costs and **$150,460** annually.

Issue for Further Study

Issues are sometimes identified by OPT that are not related to the objectives of the audit, but could yield economy and efficiency if examined in more detail. During the course of the audit, the Agency's broad requirement to treat all solid waste operators in a generic manner for operator certification purposes was identified as one such area. This section will recommend further study due to the Agency's broad requirement to treat all solid waste operators in a generic manner for operator certification purposes.

[33] See **Appendix 4.B: Operator Certification Models Detail** for model definitions.

R4.1 Solid Waste Operator Certification

Background

State and Federal Solid Waste Program Relationship Overview

The federal Resource Conservation and Recovery Act of 1976 (RCRA) separates the waste industry into three broad programs including: the hazardous waste program, the underground storage tank program, and the nonhazardous solid waste program. Under RCRA, the United States Environmental Protection Agency (USEPA) is given authority to regulate hazardous waste and may authorize states to do so under RCRA, Subtitle C. Nonhazardous solid waste, referred to most commonly and hereafter in this report simply as "solid waste", is predominantly regulated by state and local authorities. USEPA has promulgated some additional regulations, which apply to all state and local solid waste programs, and focus on solid waste disposal facility design and operation. USEPA ensures these regulations are met by requiring states to obtain approval for their solid waste permitting programs. Solid waste includes items such as garbage, refuse, industrial wastes, sludges from water and waste treatment plants, and other discarded materials.

Ohio's solid waste regulations are included in Ohio Revised Code (ORC) Chapter 3734: Solid and Hazardous Waste.[34] In Ohio C&DD is a waste regulated separately under Chapter 3714: Construction and Demolition Debris.[35] C&DD was regulated separately as it was seen as less dangerous than standard solid waste and, as a result C&DD regulations are generally less rigorous than solid and hazardous waste regulations.[36] For example, C&DD can be disposed of at solid waste landfills but solid waste cannot be disposed of at C&DD landfills.

[34] ORC § 3734.01(E) defines solid waste as "such unwanted residual solid or semisolid material as results from industrial, commercial, agricultural, and community operations, excluding earth or material from construction, mining, or demolition operations, or other waste materials of the type that normally would be included in demolition debris, nontoxic fly ash and bottom ash, including at least ash that results from the combustion of coal and ash that results from the combustion of coal in combination with scrap tires where scrap tires comprise not more than fifty [percent] of heat input in any month, spent nontoxic foundry sand, and slag and other substances that are not harmful or inimical to public health, and includes, but is not limited to, garbage, scrap tires, combustible and noncombustible material, street dirt, and debris. 'Solid wastes' does not include any material that is an infectious waste or a hazardous waste."

[35] ORC § 3714.01(C) defines C&DD as "those materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any physical structure that is built by humans, including, without limitation, houses, buildings, industrial or commercial facilities, or roadways. [C&DD] includes particles and dust created during demolition activities. [C&DD] does not include materials identified or listed as solid wastes or hazardous waste pursuant to Chapter 3734 of the Revised Code and rules adopted under it; materials from mining operations, nontoxic fly ash, spent nontoxic foundry sand, and slag; or reinforced or [non-reinforced] concrete, asphalt, building or paving brick, or building or paving stone that is stored for a period of less than two years for recycling into a usable construction material."

[36] In Ohio C&DD waste includes more than just inert materials such as wood and concrete. As such, whether C&DD is verifiably less dangerous is still being debated and studied.

Ohio's Solid Waste Program Overview

In Ohio, regulatory authority for solid waste is delegated to OEPA, with day-to-day operations and oversight specifically within the Division of Materials and Waste Management (DMWM or the Division). The Division's mission is, "To protect public health and the environment by promoting alternative waste materials management options that reduce reliance on landfills and ensuring that waste management facilities are constructed and operated in compliance with applicable laws and regulations and hazardous waste generators are in compliance with applicable laws and regulations." One such way DMWM has been tasked with upholding this mission is through administration of the solid waste and C&DD operator certification requirements.

Ohio's Operator Certification Requirement

ORC § 3734.02(L) requires that the Director shall adopt rules, "establishing a training and certification program that shall be required for employees of boards of health who are responsible for enforcing the solid waste and infectious waste provisions of this chapter and rules adopted under them and for persons who are responsible for the operation of solid waste facilities or infectious waste treatment facilities."[37] This comprises several different types of solid waste facilities, including: composting facilities, landfills for both municipal solid waste and industrial or residual waste, transfer stations, scrap tire facilities, and infectious waste treatment facilities. Similarly, ORC § 3714.062 requires that the OEPA, "shall establish a program for the certification of operators of [C&DD] facilities and shall establish continuing education training requirements for those operators as part of the certification program."

These provisions have been in the ORC since 1988 and 2005, respectively. However, OEPA has yet to implement either provision despite numerous attempts to do so, with the most recent effort for both programs having been in 2011. In general, ability to implement the operator certification programs has been hampered by a lack of consensus between the industry groups and the Agency on how best to implement the programs.

[37] Infectious waste is specifically excluded from the solid waste definition in ORC § 3734.01. However, ORC § 3734.02 includes infectious waste facilities as subject to the operator certification requirements. As such, this performance audit, when referencing the solid waste operator certification program, is inclusive of the infectious waste facility operators.

Table 4-1 shows the number of C&DD and solid and infectious waste facilities, by facility type, as of May 2015. Under current regulations, each of these facilities is subject to the certified operator requirement.

Table 4-1: Facilities Subject to Certified Operator Requirements

Facility Type	Facility Count
Total Construction and Demolition Debris Landfills	**45**
Composting Facilities I and II	24
Composting Facilities III and IV	402
Municipal Solid Waste Landfills	39
Industrial Waste Landfills	5
Residual Waste Landfills	10
Scrap Tire Facilities	28
Municipal Solid Waste Transfer Stations	61
Infectious Waste Facilities	2
Total Solid Waste and Infectious Waste Facilities	**571**
Total Nonhazardous Waste Facilities	**616**

Source: OEPA and ORC
Note: Solid waste facilities by types are reported by OEPA as of May 2015.

As shown in **Table 4-1**, there were 616 nonhazardous waste facilities in Ohio as of May 2015. Of this total, 45 were C&DD facilities while 571 were solid waste and infectious waste facilities as registered and licensed by OEPA.

Operator Certification in Other States

As previously noted, detailed regulation and oversight of solid waste is primarily a matter of state-by-state discretion. As such, there is no overarching federal requirement for operator certification. Similar to Ohio, many states have laws in place that require operator certification. There are additional states that do not explicitly require operator certification, but do require operator training regarding safety and identification and exclusion of hazardous materials from the waste stream. Finally, there are a small number of states that neither require operator certification, nor structured training, but do highly recommend that operators seek training and industry-based certification wherever possible.

Table 4-2 shows the number of states that have solid waste operator certification functions, require operator training, or highly encourage training and/or certification versus those states that have no operator certification and no requirement.

Table 4-2: Solid Waste Operator Certification Requirement Overview

	Count of States	Percent of Total
Total States Surveyed	**50**	**100.0%**
• States That Require Operator Certification [1]	28	56.0%
• States That Require Operator Training	9	18.0%
• States That Highly Encourage Training and/or Certification	3	6.0%
Total States That Require or Encourage Operator Certification or Training [2]	**39**	**78.0%**
States That Do Not Require Operator Certification or Training	**11**	**22.0%**

Source: OEPA and Other State Environmental Regulatory Authorities

[1] States that require operator certification is inclusive of Ohio.

[2] Nevada requires some training but also highly encourages operator certification. Therefore, Nevada is counted under each category, but the total has been adjusted to avoid double-counting.

As shown in **Table 4-2**, 56.0 percent of all states require solid waste operator certification. Further, 78.0 percent of all states require certification, require training, or highly encourage certification and/or training. In contrast, only 22.0 percent of all states neither have a certification nor a training requirement.

While Ohio's requirement for solid waste operators to be certified is common across other states there are options for how this program can be implemented. This section will show options which OEPA and DMWM leadership can use to better allocate resources and support development of solid waste and C&DD operator certification programs.

Methodology

This section of the performance audit, **Solid Waste Operator Certification**, seeks to assess and evaluate the potential models available to run an operator certification program and compares OEPA's prospective cost to administer each model. During the planning and scoping phase of this performance audit, OEPA leadership identified operator certification as an area where consideration had been given to implementing the program, but that the implementation models could benefit from independent evaluation. OEPA leadership identified the Division of Drinking and Ground Waters' (DDAGW) water and wastewater operator certification program as a potential internal model for comparison.

Although there are differences between the solid waste and C&DD industries (e.g., overall industry maturity, size and complexity of operations, facility design and construction standards, etc.), operator certification is required for both. Given this requirement, further analysis was conducted to determine whether or not there were data-driven differences in OEPA's observed findings and actions from actual inspections.

Table 4-3 shows violations and enforcements for C&DD and municipal solid waste (MSW)[38] landfills under direct OEPA inspection for the last three complete years, CY 2012 to CY 2014.[39]

Table 4-3: Inspections, Violations, and Enforcements CY 2012 to CY 2014 [1]

Inspections Detail	C&DD Landfills	MSW Landfills	Total
Total Inspection Letters	67	66	133
Notice of Violation Letters	7	8	15
% of Inspection Letters with Notice of Violation	**10.4%**	**12.1%**	**11.3%**
Violations and Enforcements Detail	**C&DD Landfills**	**MSW Landfills**	**Total**
Violations Recorded	18	27	45
Violations Per Letter	**2.6**	**3.4**	**3.0**
Enforcement Actions Completed	**1**	**2**	**3**

Source: OEPA

[1] Violations and enforcement data includes only those "unapproved health districts" which OEPA directly inspects for compliance.

As shown in **Table 4-3**, at 10.4 percent, C&DD landfills demonstrated a lower percentage of notice of violations in inspection letters than MSW landfills at 12.1 percent. This paradigm continues when analyzing the number of violations per letter, 2.6 to 3.4, respectively, and the number of enforcement actions completed, 1 to 2, respectively. As such, OPT found no data-driven reason for treating facilities differently for the purposes of this analysis.

Program information was provided by the Division and supplemented by testimonial evidence from management and staff. Sources of data include the Ohio Administrative Knowledge System

[38] Per Ohio Administrative Code (OAC): 3745-27-01(M)(5) "Municipal solid waste" is a type of solid waste generated from community, commercial, and agricultural operations. MSW landfills are subject to USEPA landfill design and operating criteria whereas C&DD landfills are mostly regulated by state and local governments.

[39] Health districts can apply to the Director to be approved as the licensing authority for facilities within their districts. If approved, they assume oversight and inspection duties for facilities within their boundaries.

(OAKS), ORC requirements, and internal research. This section of the performance audit was specifically designed to evaluate current and future operating models. Therefore, primary analysis will focus on the last complete year of data available at the time that this analysis was completed, CY 2014, as well as calendar year-to-date (CYTD) 2015 data where applicable. However, CY 2014 data, where applicable, is informed by CY 2012 and CY 2013 to provide a complete picture of the last three years available for analysis.

For modeling purposes, information from DDAGW was collected and analyzed, including: staffing and workload measurements and operator examinations and renewals. This was used to determine internal processing times for functional tasks that would be found within both programs such as processing applications, grading exams, approving outside courses, approving outside exams, administering data, and performing training confirmation audits.

Information was also gathered through direct outreach to similar programs in other states. Specifically, 23 states' operator certification programs were profiled for key operating inputs such as class length, continuing education unit hours (CEU), annual course offerings, and length of renewal periods.

In order to help quantify what expenses OEPA may see under an oversight model, information was gathered from associations including the Association of Talent Development (ATD), the Solid Waste Association of North America (SWANA), and the Construction and Demolition Association of Ohio (CDAO). The purpose of this outreach was to assess the extent to which an oversight model would likely require additional contact and oversight from OEPA for training course development, approval, and participation. Although these industry associations provided context for what a likely oversight model could look like it is important to note that these are not the only possible groups that the Agency could or should partner with. As such, this report does not make a determination as to which industry associations are best for oversight operating models. Further, any decision to implement an oversight model and to identify and partner with industry associations is solely at the discretion of OEPA.

Analysis was then conducted for both C&DD and solid waste operator certification programs focusing on OEPA's cost for the programs. Each operator certification program was analyzed across three models to determine and compare the cost associated with each. The three models developed for analysis include:

- **Agency Model –** This model considers the cost to OEPA if it runs the training and certification program with all its own staff and resources.
- **Industry Model –** This model considers the cost to OEPA if it allowed the industry to run the majority of certification functions. While the extent of control in program operations OEPA will relinquish to the industry is entirely up to OEPA, this model assumes that OEPA will retain basic administrative functions as a way to maintain a level of program oversight.
- **Oversight Model –** This model represents the most likely middle-ground implementation position where OEPA adopts a collaborative implementation stance. Agency staff will retain oversight of the program and will support industry partners in developing courses and presenting trainings. In turn, industry partners will organize training events and provide a significant amount of coursework and program content.

Models were built specifically to adhere to the requirements of the ORC, with information gathered from other state programs used to estimate functions that were broadly defined. DDAGW data was used to calculate costs for functional activities that would be present in both programs.[40] See **Appendix 4.A: Water and Wastewater Operator Certification** for additional detail on DDAGW's operator certification program.

Each model was broken down into initial costs and annual operating costs so that models could be analyzed from the perspective of both startup and ongoing costs. Ongoing costs were estimated based on what a standard future year would look like and not necessarily what year two, year three, etc. would cost. Each of these subsets is broken down further into two sections, direct labor and other labor. The direct labor section calculates the cost based on three major program functional areas: the certification course development and presentation costs, the continuing education refresher course development and presentation costs, and administrative functions required by a certification program including: application processing, grading exams, outside course approval time, exam approval, operator CEU confirmation audits, and data administration. The other labor section calculates costs to OEPA for indirect labor, leave and break compensation, and non-program hours involved with allocating staff to set up and operate a certification program internally.

Appendix 4.B Operator Certification Models Detail provides full model tables for the C&DD and solid waste operator certification programs for all three models. **Appendix 4.C: Operator Certification Model Descriptions** provides additional definitions and descriptions of the information and analysis presented in **Appendix 4.B**.

[40] DDAGW's operation provides an informative model for what direct labor needs would look like for a similar operator certification program for solid waste and C&DD. However, it should be noted that not all comparisons are exact parallels to what the program model will likely be for DMWM. Specifically, the number of operators that participate in each program could impact the way programs may be run. In addition, due to DDAGW's large operator pool there is a greater potential for market incentive to easily drive the development of industry training providers.

Analysis

C&DD Operator Certification Program

Table 4-5 shows the current requirements for a C&DD operator certification program per ORC § 3714.062.

Table 4-5: Ohio's C&DD Operator Certification Requirements

C&DD Operators	
Operator Certification Requirement	C&DD Facility Operators
Course Offering Timing Requirement	None Specified
Certification Renewal Period Requirement	None Specified
Continuing Education Requirement	10 Hours per Year

Source: ORC

As shown in **Table 4-5**, the ORC requirements for a certification program are broad. The most notable piece of the requirement is that each operator will require 10 hours of continuing education every year in order to maintain certification.

Table 4-6 shows the length of initial training (in days), renewal period (in years), annual CEU requirements, and number of exams held annually for the 23 other states that have solid waste operator certification programs and were profiled by OPT as of CYTD 2015.[41] Each of these four elements was observed to be in place in nearly every program surveyed. Furthermore, these elements provide structure that helps to fill in the gaps from Ohio's current rules (see **Table 4-5** and **Table 4-10**). Where necessary, in developing models for OEPA's implementation of operator certification, the average parameters of other states running operator certification programs were used as a proxy for what might likely be required under the final program structure in Ohio.

[41] Not all states differentiate between C&DD and solid waste streams so solid waste programs as a whole were profiled for this analysis.

Table 4-6: Other State Operator Certification Program Data

State	Length of Initial Training (Days)	Renewal Period (Years)	Annual CEU Requirement	Exams Held Annually
Connecticut	1.0	5.0	N/A	12.0
Minnesota	2.0	3.0	4.00	7.0
Missouri	3.0	3.0	3.33	2.0
New Hampshire	1.0	1.0	2.50	3.0
North Dakota	3.5	1.0	8.00	1.0
Tennessee	3.0	3.0	8.00	1.0
Florida	3.0	3.0	5.33	7.0
Georgia	4.0	5.0	6.00	2.0
Illinois	0.5	3.0	N/A	8.0
Indiana	N/A	1.0	4.00	4.0
Iowa	3.0	2.0	5.00	4.0
Kentucky	2.0	5.0	N/A	1.0
Louisiana	N/A	4.0	10.00	2.0
Mississippi	N/A	3.0	12.00	N/A
New Mexico	4.0	3.0	8.00	2.0
New York	1.0	N/A	N/A	N/A
North Carolina	1.5	3.0	3.33	6.0
South Carolina	4.0	3.0	3.50	1.0
Texas	4.0	3.0	5.33	7.0
Virginia [1]	N/A	2.0	4.00	Daily
Washington [2]	3.0	3.0	10.00	As Needed
West Virginia	N/A	3.0	10.00	N/A
Wisconsin	N/A	2.0	3.00	2.0
Average	2.6	2.9	6.07	4.0
Rounded to Nearest Whole	**3.0**	**3.0**	**6.00**	**4.0**

Source: Other State Environmental Regulatory Authorities

[1] Virginia's solid waste operator certification program is managed by a third-party that provides computer-based testing centers which allow for daily testing.

[2] Washington's SWANA chapter provides the operator training and certification course. The chapter schedules the course as needed, when at least 12 or more individuals are interested, rather than offering it a set number of times annually.

As shown in **Table 4-6**, other states running operator certification programs average: three days for initial training courses; three years per renewal period, six CEUs per renewal period, and four exams per year. As previously noted, these averages are used within Ohio-specific models when ORC does not contain explicit requirements.

C&DD facilities typically have staff performing a multitude of functions on a day-to-day basis. For example, some staff manage the intake of direct haul waste; other staff perform the hands-on sorting of the waste prior to landfilling; and still other staff provide management, operational oversight, and direction. The latter group is typically characterized as "facility operators" across the industry. Rather than specifically identifying a sub-set of staff that should be certified, ORC § 3714.062 broadly states that the requirement to be certified applies to "operators of construction and demolition debris facilities." Given that the actual extent to which certification

is required is left ambiguous, a scan of the other states with an operator certification program in place was conducted to assess the likely number of staff at a given facility that should require certification.

Table 4-7 shows the distribution of states that require on-site operators compared to those that do not specify. Further, since the majority of states that specify tend to do so in a manner that requires a certified operator to be on site during all hours of facility operation, the practical implication on the certified workforce was calculated by using industry working hours and leave information. For example, a facility that operates eight hours per day, in a state that requires a certified operator to be on duty during all hours of operation, will need at least two certified operators on staff to reasonably be able to maintain compliance with the requirement.

Table 4-7: Other State Operator Requirements

Operators Required On-site at All Times		
State Requirement	**State Count**	**Percent of Total**
On Site at All Times of Operation	16	69.6%
Not Specified	7	30.4%
Total	23	100.0%
Operator Available Hours Calculation		
Total Paid Hours per Year [1]		2,194.40
Average Leave Compensation Percent		4.5%
Total Leave Hours per Year		98.75
Available Work Hours per Year		2,095.65

Source: Other State Environmental Regulatory Authorities and United States Bureau of Labor Statistics (BLS)
[1] According to BLS, waste management and remediation service employees had an average work week of 42.2 hours for October 2014 to January 2015.

As shown in **Table 4-7**, 69.6 percent of other states with operator certification programs have requirements that the operator be on-site during all hours of operation. The table also shows that the average employee in waste management and remediation services will receive 98.75 hours of leave annually. Considering that the majority of states require operators on-site during operations, and accounting for the number of leave hours each employee likely receives per year, it is reasonable to assume that at least two certified operators will be required for each facility.

Table 4-8 shows the estimated number of C&DD operators that would require certification based on a minimum of two certified operators per facility.

Table 4-8: Identification of C&DD Operators Requiring Certification

	Facilities	**Certified Operators**
C&DD	45	90
Total C&DD	**45**	**90**

Source: OEPA

As shown in **Table 4-8**, it is estimated that a total of at least 90 certified operators will be required to appropriately staff C&DD facilities in accordance with a certified operator program. As such, the certification models for C&DD operators will estimate 90 total operators for initial

startup purposes. After the first year, a turnover rate is required to account for annual new certifications versus ongoing renewals. Based on DDAGW's experience, 86.8 percent of operators renew annually while the remaining 13.2 percent exit the certification system (i.e., turnover). Applying this same turnover rate to 90 operators identified that, on average, 12 operators per year will turnover across all C&DD facilities. The remaining 78 operators will continue to seek annual CEUs required for certification renewal requirements.

Table 4-9 shows the estimated personnel cost to OEPA to run an Agency Model, an Industry Model, and an Oversight Model for the C&DD operator certification program.

Table 4-9: C&DD Operator Certification Model Comparison

C&DD Initial Startup Costs			
Functional Task Labor Costs	**Agency**	**Industry**	**Oversight**
Total Certification Training Costs	$48,422	$0	$24,991
Total Refresher Training Costs	$54,793	$0	$35,387
Total Administrative Costs	$2,255	$2,531	$2,396
Total Direct Labor Cost	**$105,470**	**$2,531**	**$62,774**
Total Other Labor Hours Cost [1]	**$10,110**	**$0**	**$0**
Total Initial Startup Costs	**$115,580**	**$2,531**	**$62,774**
Difference From Agency Model	**N/A**	**($113,049)**	**($52,806)**
C&DD Annual Operating Costs			
Functional Task Labor Costs	**Agency**	**Industry**	**Oversight**
Total Certification Training Costs	$5,614	$0	$3,487
Total Refresher Training Costs	$3,422	$0	$1,991
Total Administrative Costs	$751	$1,064	$929
Total Direct Labor Cost	**$9,787**	**$1,064**	**$6,407**
Total Other Labor Hours Cost [1]	**$25,324**	**$0**	**$0**
Total Annual Operating Costs	**$35,111**	**$1,064**	**$6,407**
Difference From Agency Model	**N/A**	**($34,047)**	**($28,704)**

Source: Other State Environmental Regulatory Authorities, OEPA, ORC, and OPT Analysis

[1] Total Other Labor Hours Cost include indirect labor costs and non-program hour costs.

Note: Other Labor was computed for a 2.0 FTE certification team managing both certification programs. The C&DD cost represents the percent of C&DD program hours out of total hours for both programs. The remaining percentage is attributed to the solid waste operator certification program.

As shown in **Table 4-9**, the Agency program model carries the highest cost to OEPA in terms of both initial startup costs and annual operating cost. The initial costs in the Agency Model total $115,580 while the annual operating costs total $35,111. The Industry Model carries the lowest cost to OEPA with initial startup costs totaling $2,531 and annual costs totaling $1,064. The Oversight Model costs are in-between these models with initial startup costs totaling $62,774 and annual operating costs totaling $6,407. The total initial cost difference between the Agency Model and the Industry Model is $113,049 and the difference between the Agency Model and the Oversight Model is $52,806. The total annual cost difference between the Agency Model and the Industry Model is $34,047 and the difference between the Agency Model and the Oversight Model is $28,704.

While the Industry Model is the least expensive C&DD operator certification model it also relinquishes the most control over program design and oversight. The Oversight Model provides a more realistic look at the cost to OEPA of running an Industry Model as it engages with the industry to assist in course development and presentation. As noted above, it still retains preferential costs compared to the Agency Model while fulfilling the State's requirement to certify its C&DD operators.

When comparing the models the Agency Model has a greater cost profile for every major line item for both the initial and annual costs except for administrative costs. This is due to the Agency Model requiring OEPA staff to do all the course development and presentation work. In both of the industry models there is greater administrative cost because all or part of the courses are being developed by the industry and the Agency's role would be to approve the parts of the course they did not develop. Furthermore, an Agency Model would require the establishment of a certification team to run the program. To run an Agency Model, OEPA would have to budget for labor cost beyond just the direct labor involved with running a program, to include compensation for indirect labor and annually for non-program hours that staff would need to fill outside of program tasks. This is an inherent cost to running the program internally due to having to staff a regular program team that is not present in industry models.

Solid Waste Operator Certification Program

Table 4-10 shows the current requirements for a solid waste operator certification program per ORC § 3734.02(L).

Table 4-10: Ohio's Solid Waste Operator Certification Requirements

Solid Waste Operators	
Operator Certification Requirement	Solid Waste Facility Operators Infectious Waste Treatment Facility Operators Approved Health District Inspectors
Course Offering Timing Requirement	Annually
Certification Renewal Period Requirement	Every Three Years
Continuing Education Requirement	None Specified

Source: ORC

As shown in **Table 4-10**, the ORC requirements for a solid waste operator certification program are more detailed than C&DD, but still rather broad. The most notable piece of the requirement is that each certification will have a three-year renewal period. Remaining program requirements were estimated using the average parameters of other states running operator certification programs as shown in **Table 4-6.** Specifically, an average initial training course length of three days, six CEUs per renewal period, and exams being held four times annually will be within Ohio-specific models when ORC does not contain specific requirements.

Table 4-11 shows the estimated number of solid waste operators that would require certification based on a minimum of two certified operators per facility (see **Table 4-7**). In addition, each approved health district (AHD) requires at least one certified inspector in order to comply with ORC § 3734.02(L), which specifically states that the "certification program…shall be required

for employees of boards of health who are responsible for enforcing solid and infectious waste provisions".

Table 4-11: Identification of Solid Waste Operators Requiring Certification

Facilities by Type	Facilities	Certified Individuals
Composting Facilities	426	852
Municipal Solid Waste Landfills	39	78
Industrial Solid Waste Landfills	5	10
Residual Solid Waste Landfills	10	20
Municipal Solid Waste Transfer Stations	61	122
Scrap Tire Facilities	28	56
Infectious Waste Treatment Facilities	2	4
Total Solid Waste Facilities	**571**	**1,142**
Total AHD Inspectors [1]	**N/A**	**71**
Total Solid Waste Certified Operators		**1,213**

Source: OEPA

[1] There were 71 approved health districts as of February 2015.

As shown in **Table 4-11**, it is estimated that a total of at least 1,213 certified operators will be required to staff and inspect solid waste and infectious waste facilities in accordance with a certified operator program. As such, the certification models for solid waste operators (inclusive of infectious waste facilities) will estimate 1,213 total operators for initial startup purposes. After the first year a turnover rate is required to account for annual new certifications versus ongoing renewals. Based on DDAGW's experience, 86.8 percent of operators renew annually while the remaining 13.2 percent exit the certification system (i.e., turnover). Applying this same turnover rate to 1,213 operators identified that, on average, 160 operators per year will turnover across all solid waste facilities and AHDs (i.e., inspectors). The remaining 1,053 operators will continue to seek annual CEUs required for certification renewal requirements.

Table 4-12 shows the estimated personnel cost to OEPA to run an Agency Model, an Industry Model, and an Oversight Model for the solid waste operator certification program.

Table 4-12: Solid Waste Operator Certification Model Comparison

Solid Waste Initial Startup Costs			
Functional Task Labor Costs	**Agency**	**Industry**	**Oversight**
Total Certification Training Costs	$112,645	$0	$2,605
Total Refresher Training Costs	$32,876	$0	$0
Total Administrative Costs	$30,396	$30,616	$30,616
Total Direct Labor Cost	**$175,917**	**$30,616**	**$33,221**
Total Other Labor Hours Cost [1]	**$16,862**	**$0**	**$0**
Total Initial Startup Costs	**$192,779**	**$30,616**	**$33,221**
Difference From Agency Model	**N/A**	**($162,163)**	**($159,558)**
Solid Waste Annual Operating Costs			
Functional Task Labor Costs	**Agency**	**Industry**	**Oversight**
Total Certification Training Costs	$12,494	$0	$197
Total Refresher Training Costs	$16,886	$0	$0
Total Administrative Costs	$10,083	$19,781	$19,634
Total Direct Labor Cost	**$39,463**	**$19,781**	**$19,831**
Total Other Labor Hours Cost [1]	**$102,124**	**$0**	**$0**
Total Annual Operating Costs	**$141,587**	**$19,781**	**$19,831**
Difference From Agency Model	**N/A**	**($121,806)**	**($121,756)**

Source: Other State Environmental Regulatory Authorities, OEPA, ORC, and OPT Analysis
[1] Total Other Labor Hours Cost include indirect labor costs and non-program hours costs.
Note: Other Labor was computed for a 2.0 FTE certification team managing both certification programs. The solid waste cost represents the percent of solid waste program hours out of total hours for both programs. The remaining percentage is attributed to the C&DD operator certification program.

As shown in **Table 4-12**, the Agency program model carries the highest cost to OEPA in terms of both initial startup costs and annual operating cost. The initial costs in the Agency Model total $192,779 while the annual operating costs total $141,587. The Industry Model carries the lowest cost to OEPA with initial startup costs totaling $30,616 and annual costs totaling $19,781. The Oversight Model costs are in-between these models with initial startup costs totaling $33,221 and annual operating costs totaling $19,831. The total initial cost difference between the Agency Model and the Industry Model is $162,163 and the difference between the Agency Model and the Oversight Model is $159,558. The total annual cost difference between the Agency Model and the Industry Model is $121,806 and the difference between the Agency Model and the Oversight Model is $121,756.

While the Industry Model is the least expensive solid waste operator certification model it also relinquishes the most control over program design and oversight. The Oversight Model provides a more realistic look at the cost to OEPA of running an Industry Model as it engages with the industry to assist in course development and presentation. As noted above, it still retains preferential costs compared to the Agency Model while fulfilling the State's requirement to certify solid waste operators and inspectors.

When comparing these models the Agency Model has a greater cost profile for every major line item for both the initial and annual costs except for administrative costs. This is due to the Agency Model doing all the course development and presentation work. In both the industry models there is greater administrative cost because all or part of the courses are being developed by the industry and the Agency's role would be to approve the parts of the course they did not develop. Furthermore, an Agency Model would require the establishment of a certification team to run the program. To run an Agency Model, OEPA would have to budget for labor cost beyond just the direct labor involved with running a program, to include compensation for indirect labor and annually for non-program hours that staff would need to fill outside of program tasks. This is an inherent cost to running the program internally due to having to staff a regular program team that is not present in industry models.

Conclusion

The Oversight Model offers the best mix of low-cost service provision and effective program oversight. Furthermore, by including the industry in program operation, OEPA is also likely to receive greater buy-in from the operators required to participate. The Oversight Model provides the best opportunity for OEPA to successfully launch and operate these certification programs in an efficient, effective manner.

Recommendation 4.1: OEPA should implement solid waste and construction and demolition debris operator certification programs in accordance with Ohio Revised Code requirements. In doing so, the Agency should adopt a collaborative industry oversight model. This model will allow the Agency to retain reasonable oversight and control over content and standards while leveraging industry knowledge and partnership to administer the program in a cost-efficient manner.

Financial Implication 4.1: By analyzing and implementing identified opportunities for more efficient and effective enactment of solid waste and C&DD operator certification programs, OEPA can ensure that resources are allocated towards mission-critical functions. Adopting an Oversight Model for the C&DD operator certification program over an Agency Model could net cost savings of $52,806 on initial program startup costs and $28,704 in annual costs. Adopting an Oversight Model for the solid waste operator certification program over an Agency Model could net cost savings of $159,558 on initial program startup costs and $121,756 in annual costs. This program model would save the Agency **$212,364** on initial program startup costs and **$150,460** annually thereafter.

Issue for Further Study

Issues are sometimes identified by OPT that are not related to the objectives of the audit, but could yield economy and efficiency if examined in more detail. During the course of the audit, the Agency's broad requirement to treat all solid waste operators in a generic manner for operator certification purposes was identified as one such area.

Solid Waste Operator Certification Requirement: OEPA and the General Assembly should further study the requirement that all solid waste facility types be required to have certified operators. In current form ORC Chapter 3734: Solid and Hazardous Wastes treats all solid waste facilities the same. The practical consideration is that in developing and implementing rules for operator certification, all solid waste landfills, compost facilities, scrap tire facilities, infectious waste treatment facilities, and transfer facilities would currently be treated the same. However, Division leadership and staff believe that there are inherent differences among these types of facilities and the most effective way to develop and implement rules for operator certification would be to recognize and tailor the requirements to these differences. In final form, rules regarding operator certification might require more intensive training, certification, and continuing education for operators of certain types of facilities, but may be less intense or even not required for other types of facilities.

Appendix 4.A: Water and Wastewater Operator Certification

Ohio has had a water and wastewater certification program since the 1930s. OEPA took over responsibility for the certification program when it was established in 1972. The program is currently run by the Division of Drinking and Ground Waters (DDAGW) in accordance with ORC § 6109.04(A)(1)(b) and § 6111.46, and services approximately 12,000 operators

All operators of water and wastewater systems in Ohio are required to be certified. However, each program, water and wastewater, has seven classification levels based on functional areas and operator experience. Operators are required to pass a certification exam based on the knowledge level deemed commensurate with the identified classification level. Initial certification exams are offered twice a year in Columbus, Ohio and monthly at five locations across the State in partnership with a third-party testing center. Once certified, operators are required to submit renewals every two years, but in order to receive renewal the operator must submit a fee and a record of CEUs taken during the renewal period. Similar to exam content, CEU requirements are determined according to operator certification level. These CEU courses are pre-approved by the DDAGW to ensure relevant and appropriate content.

Appendix 4.B: Operator Certification Models Detail

The following pages present financial information for each of three program models for both C&DD and solid waste operator certification programs. The three models used to analyze and compare operator certification programs were:

- **Agency Model –** This model considers the cost to OEPA if it runs the training and certification program with all its own staff and resources.
- **Industry Model –** This model considers the cost to OEPA if it allowed the industry to run the majority of certification functions. While the extent of control in program operations OEPA will relinquish to the industry is entirely up to OEPA, this model assumes that OEPA will retain basic administrative functions as a way to maintain a level of program oversight.
- **Oversight Model –** This model represents the most likely middle-ground implementation position where OEPA adopts a collaborative implementation stance. Agency staff will retain oversight of the program and will support industry partners in developing courses and presenting trainings. In turn, industry partners will organize training events and provide a significant amount of coursework and program content.

For additional detail or technical definitions of data points shown in the model see **Appendix 4.C: Operator Certification Model Descriptions**.

C&DD Agency Model		
C&DD Initial Startup Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Course Development	$43,835	1,032.0
Presentations	$4,587	108.0
Total Certification Training Costs	**$48,422**	**1,140.0**
Total Refresher Training Costs		
Course Development	$54,793	1,290.0
Presentations	$0	0.0
Total Refresher Training Costs	**$54,793**	**1,290.0**
Total Administrative Costs		
Initial Certification Application Processing	$2,037	48.0
Grading Exams	$78	1.8
Renewal Application Processing	$0	0.0
Renewal Course Approval	$0	0.0
Initial Course Approval	$0	0.0
Exam Approval	$0	0.0
Confirmation Audits	$0	0.0
Data Administration	$140	3.3
Total Administrative Costs	**$2,255**	**53.1**
Total Other Labor Costs		
Indirect Labor Hours	$10,110	238.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$10,110**	**238.0**
Total Initial Startup Costs		
Total Initial Startup Costs	**$115,580**	**2,721.1**
C&DD Annual Operating Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Annual Course Development	$3,320	78.2
Presentations	$2,294	54.0
Total Certification Training Costs	**$5,614**	**132.2**
Total Refresher Training Costs		
Annual Course Development	$1,383	32.6
Presentations	$2,039	48.0
Total Refresher Training Costs	**$3,422**	**80.6**
Total Administrative Costs		
Initial Certification Application Processing	$272	6.4
Grading Exams	$10	0.2
Renewal Application Processing	$329	7.7
Renewal Course Approval	$0	0.0
Initial Course Approval	$0	0.0
Exam Approval	$0	0.0
Confirmation Audits	$0	0.0
Data Administration	$140	3.3
Total Administrative Costs	**$751**	**17.6**
Total Other Labor Costs		
Indirect Labor Hours	$5,360	126.2
Non-Program Hours	$19,964	470.0
Total Other Labor Costs	**$25,324**	**596.2**
Total Annual Operating Cost		
Total Annual Operating Costs	**$35,111**	**826.6**

C&DD Industry Model		
C&DD Initial Startup Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Course Development	$0	0.0
Presentations	$0	0.0
Total Certification Training Costs	**$0**	**0.0**
Total Refresher Training Costs		
Course Development	$0	0.0
Presentations	$0	0.0
Total Refresher Training Costs	**$0**	**0.0**
Total Administrative Costs		
Initial Certification Application Processing	$2,037	48.0
Grading Exams	$78	1.8
Renewal Application Processing	$0	0.0
Renewal Course Approval	$56	1.3
Initial Course Approval	$135	3.2
Exam Approval	$85	2.0
Confirmation Audits	$0	0.0
Data Administration	$140	3.3
Total Administrative Costs	**$2,531**	**59.6**
Total Other Labor Costs		
Indirect Labor Hours	$0	0.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$0**	**0.0**
Total Initial Startup Costs		
Total Initial Startup Costs	**$2,531**	**59.6**
C&DD Annual Operating Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Annual Course Development	$0	0.0
Presentations	$0	0.0
Total Certification Training Costs	**$0**	**0.0**
Total Refresher Training Costs		
Annual Course Development	$0	0.0
Presentations	$0	0.0
Total Refresher Training Costs	**$0**	**0.0**
Total Administrative Costs		
Initial Certification Application Processing	$272	6.4
Grading Exams	$10	0.2
Renewal Application Processing	$329	7.7
Renewal Course Approval	$56	1.3
Initial Course Approval	$135	3.2
Exam Approval	$85	2.0
Confirmation Audits	$37	0.9
Data Administration	$140	3.3
Total Administrative Costs	**$1,064**	**25.0**
Total Other Labor Costs		
Indirect Labor Hours	$0	0.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$0**	**0.0**
Total Annual Operating Cost		
Total Annual Operating Costs	**$1,064**	**25.0**

C&DD Oversight Model		
C&DD Initial Startup Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Course Development	$21,232	499.9
Presentations	$3,759	88.5
Total Certification Training Costs	**$24,991**	**588.4**
Total Refresher Training Costs		
Course Development	$35,387	833.1
Presentations	$0	0.0
Total Refresher Training Costs	**$35,387**	**833.1**
Total Administrative Costs		
Initial Certification Application Processing	$2,037	48.0
Grading Exams	$78	1.8
Renewal Application Processing	$0	0.0
Renewal Course Approval	$20	0.5
Initial Course Approval	$36	0.8
Exam Approval	$85	2.0
Confirmation Audits	$0	0.0
Data Administration	$140	3.3
Total Administrative Costs	**$2,396**	**56.4**
Total Other Labor Costs		
Indirect Labor Hours	$0	0.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$0**	**0.0**
Total Initial Startup Costs		
Total Initial Startup Costs	**$62,774**	**1,477.9**
C&DD Annual Operating Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Annual Course Development	$1,607	37.9
Presentations	$1,880	44.3
Total Certification Training Costs	**$3,487**	**82.2**
Total Refresher Training Costs		
Annual Course Development	$894	21.0
Presentations	$1,097	25.8
Total Refresher Training Costs	**$1,991**	**46.8**
Total Administrative Costs		
Initial Certification Application Processing	$272	6.4
Grading Exams	$10	0.2
Renewal Application Processing	$329	7.7
Renewal Course Approval	$20	0.5
Initial Course Approval	$36	0.8
Exam Approval	$85	2.0
Confirmation Audits	$37	0.9
Data Administration	$140	3.3
Total Administrative Costs	**$929**	**21.8**
Total Other Labor Costs		
Indirect Labor Hours	$0	0.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$0**	**0.0**
Total Annual Operating Cost		
Total Annual Operating Costs	**$6,407**	**150.8**

Solid Waste Agency Model		
Solid Waste Initial Startup Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Course Development	$43,835	1,032.0
Presentations	$68,810	1,620.0
Total Certification Training Costs	**$112,645**	**2,652.0**
Total Refresher Training Costs		
Course Development	$32,876	774.0
Presentations	$0	0.0
Total Refresher Training Costs	**$32,876**	**774.0**
Total Administrative Costs		
Initial Certification Application Processing	$27,455	646.4
Grading Exams	$1,057	24.9
Renewal Application Processing	$0	0.0
Renewal Course Approval	$0	0.0
Initial Course Approval	$0	0.0
Exam Approval	$0	0.0
Confirmation Audits	$0	0.0
Data Administration	$1,884	44.4
Total Administrative Costs	**$30,396**	**715.7**
Total Other Labor Costs		
Indirect Labor Hours	$16,862	397.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$16,862**	**397.0**
Total Initial Startup Costs		
Total Initial Startup Costs	**$192,779**	**4,538.7**
Solid Waste Annual Operating Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Annual Course Development	$3,320	78.2
Presentations	$9,174	216.0
Total Certification Training Costs	**$12,494**	**294.2**
Total Refresher Training Costs		
Annual Course Development	$830	19.5
Presentations	$16,056	378.0
Total Refresher Training Costs	**$16,886**	**397.5**
Total Administrative Costs		
Initial Certification Application Processing	$3,621	85.3
Grading Exams	$139	3.3
Renewal Application Processing	$4,439	104.5
Renewal Course Approval	$0	0.0
Initial Course Approval	$0	0.0
Exam Approval	$0	0.0
Confirmation Audits	$0	0.0
Data Administration	$1,884	44.4
Total Administrative Costs	**$10,083**	**237.5**
Total Other Labor Costs		
Indirect Labor Hours	$21,613	508.8
Non-Program Hours	$80,511	1,895.5
Total Other Labor Costs	**$102,124**	**2,404.3**
Total Annual Operating Cost		
Total Annual Operating Costs	**$141,587**	**3,333.5**

Solid Waste Industry Model		
Solid Waste Initial Startup Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Course Development	$0	0.0
Presentations	$0	0.0
Total Certification Training Costs	**$0**	**0.0**
Total Refresher Training Costs		
Course Development	$0	0.0
Presentations	$0	0.0
Total Refresher Training Costs	**$0**	**0.0**
Total Administrative Costs		
Initial Certification Application Processing	$27,455	646.4
Grading Exams	$1,057	24.9
Renewal Application Processing	$0	0.0
Renewal Course Approval	$0	0.0
Initial Course Approval	$135	3.2
Exam Approval	$85	2.0
Confirmation Audits	$0	0.0
Data Administration	$1,884	44.4
Total Administrative Costs	**$30,616**	**720.9**
Total Other Labor Costs		
Indirect Labor Hours	$0	0.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$0**	**0.0**
Total Initial Startup Costs		
Total Initial Startup Costs	**$30,616**	**720.9**
Solid Waste Annual Operating Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Annual Course Development	$0	0.0
Presentations	$0	0.0
Total Certification Training Costs	**$0**	**0.0**
Total Refresher Training Costs		
Annual Course Development	$0	0.0
Presentations	$0	0.0
Total Refresher Training Costs	**$0**	**0.0**
Total Administrative Costs		
Initial Certification Application Processing	$3,621	85.3
Grading Exams	$139	3.3
Renewal Application Processing	$4,439	104.5
Renewal Course Approval	$8,976	211.3
Initial Course Approval	$135	3.2
Exam Approval	$85	2.0
Confirmation Audits	$502	11.8
Data Administration	$1,884	44.4
Total Administrative Costs	**$19,781**	**465.8**
Total Other Labor Costs		
Indirect Labor Hours	$0	0.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$0**	**0.0**
Total Annual Operating Cost		
Total Annual Operating Costs	**$19,781**	**465.8**

Solid Waste Oversight Model		
Solid Waste Initial Startup Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Course Development	$2,605	61.3
Presentations	$0	0.0
Total Certification Training Costs	**$2,605**	**61.3**
Total Refresher Training Costs		
Course Development	$0	0.0
Presentations	$0	0.0
Total Refresher Training Costs	**$0**	**0.0**
Total Administrative Costs		
Initial Certification Application Processing	$27,455	646.4
Grading Exams	$1,057	24.9
Renewal Application Processing	$0	0.0
Renewal Course Approval	$0	0.0
Initial Course Approval	$135	3.2
Exam Approval	$85	2.0
Confirmation Audits	$0	0.0
Data Administration	$1,884	44.4
Total Administrative Costs	**$30,616**	**720.9**
Total Other Labor Costs		
Indirect Labor Hours	$0	0.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$0**	**0.0**
Total Initial Startup Costs		
Total Initial Startup Costs	**$33,221**	**782.2**
Solid Waste Annual Operating Costs		
Functional Task Labor Costs	**Cost**	**Hours**
Total Certification Training Costs		
Annual Course Development	$197	4.6
Presentations	$0	0.0
Total Certification Training Costs	**$197**	**4.6**
Total Refresher Training Costs		
Annual Course Development	$0	0.0
Presentations	$0	0.0
Total Refresher Training Costs	**$0**	**0.0**
Total Administrative Costs		
Initial Certification Application Processing	$3,621	85.3
Grading Exams	$139	3.3
Renewal Application Processing	$4,439	104.5
Renewal Course Approval	$8,976	211.3
Initial Course Approval	$45	1.1
Exam Approval	$28	0.7
Confirmation Audits	$502	11.8
Data Administration	$1,884	44.4
Total Administrative Costs	**$19,634**	**462.4**
Total Other Labor Costs		
Indirect Labor Hours	$0	0.0
Non-Program Hours	$0	0.0
Total Other Labor Costs	**$0**	**0.0**
Total Annual Operating Cost		
Total Annual Operating Costs	**$19,831**	**467.0**

Appendix 4.C: Operator Certification Model Descriptions

Program Model	
Initial Startup Costs	
Total Certification Training Costs	
Course Development	This portion of the analysis caulculates OEPA's cost to develop the initial certification course based on: the Association for Talent Developments survey of 43 hours of development for every 1 hour of classroom learning (ADDIE model) and industry input into the time regulators spend helping to create the initial courses. Course length is based on other states average length of initial certification course.
Presentations	This portion of the analysis caulcuates OEPA's cost to present and attend the initial certification trainings during the startup year. This calculation assumes two OEPA personnel are required for presentations.
Total Certification Training Costs	This provides a summary total of OEPA's certification training cost for the start up year.
Total Refresher Training Costs	
Course Development	This portion of the analysis calculates OEPA's cost to develop the initial certification course based on: the Association for Talent Developments survey of 43 hours of development for every 1 hour of classroom learning (ADDIE model) and industry input into the time regulators spend helping to create initial course. Initial development takes into account the cost of developing three CEU refresher courses in the first year. OEPA staff identified that three seperate refresher courses, each meeting the CEU requirement, would be encessary to get the program running while providing enough new content to be value-add to training attendees.so the same content is not being presented each year. Course length is based on other states average number of CEUs per year for solid waste and the ORC requirement for C&DD
Presentations	This portion of the analysis calculates OEPA's cost to present and attend the CEU refresher course training during the startup year. This calculation assumes two OEPA personnel are required for presentations
Total Refresher Training Costs	This provides a summary total of OEPA's refresher training cost for the startup year.
Total Administrative Costs	
Initial Certification Application Processing	This portion of the analysis calculates OEPA's cost to process initial certification applications during the startup year by multiplying the number of operators seeking initial certification by DDAGW's processing time per initial application.
Grading Exams	This portion of the analysis calculates OEPA's cost to grade exams during the startup year by multiplying operators seeking initial certification by DDAGW's processing time per initial application. OEPA will grade all exams across all models.
Renewal Application Processing	This portion of the analysis calculates OEPA's cost to process renewal certification applications during startup year. There would be no renewals during the startup year.
Renewal Course Approval	This portion of the analysis calculates OEPA's cost to approve courses for annual CEUs. The DDAGW approval processing time per CEU was identified as a model. The percent of total CEUs approved by DDAGW was compared to the total CEUs needed by all operators. This ratio was applied to model CEU and approval needs. These two ratios are multiplied to determine a cost for processing enough approved CEU courses to meet model renewal requirements. This is also used to determine the cost to approve third-party course materials by multiplying the cost per CEU by the number of CEUs requiring approval .
Initial Course Approval	This portion of the analysis calculates OEPA's cost to approve third-party initial certification courses based on DDAGW's approval cost per CEU. This cost is also used for approval of third-party course materials.
Exam Approval	This portion of the analysis calculates OEPA's cost to ensure third-party exams are sufficient to cover program material. DDAGW's third-party exam approval cost was identified as a model.
Confirmation Audits	This portion of the analysis calculates OEPA's cost to audit select renewal application documentation during the startup year. However, there are no renewals during the startup year.
Data Administration	This portion of the analysis calculates OEPA's cost to audit select renewal application documentation during the startup year. However, there are no renewals during the startup year.
Total Administrative Costs	This provides a summary total of OEPA's administrative cost for the startup year.
Total Other Labor Costs	
Indirect Labor Hours	This portion of the analysis calculates OEPA's cost incurred for the number of hours that a full-time employee (FTE) would spend working directly on program tasks and then computes indirect compensations for those hours (i.e.,: leave and breaks). This calculation assumes two OEPA personnel are required for presentations.
Non-Program Hours	This portion of the analysis calculates OEPA's cost to compensate 2.0 FTEs for time other than direct and indirect labor hours previously calculated. During the startup year there are more direct labor hours that 2.0 FTEs can supply.
Total Other Labor Costs	This provides a summary total of OEPA's other labor cost for the startup year.
Total Initial Startup Costs	
Total Initial Startup Costs	This provides a summary total of OEPA's cost for the startup year.

Annual Operating Costs	
Total Certification Training Costs	
Annual Course Development	This portion of the analysis calculates OEPA's annual cost to update certification training courses. This calculation uses the percentage of total time used by DDAGW for program development as a model.
Presentations	This portion of the analysis calculates OEPA's annual cost to present at the initial certification trainings. This calculation assumes two OEPA personnel are required for presentations.
Total Certification Training Costs	This provides a summary total of OEPA's annual certification training cost.
Total Refresher Training Costs	
Annual Course Development	This portion of the analysis calculates OEPA's annual cost to update refresher training courses. This calculation uses the percentage of total time used by DDAGW for program development as a model.
Presentations	This portion of the analysis calculates OEPA's annual cost to present and attend the CEU refresher course training. This calculation assumes two OEPA personnel are required for presentations.
Total Refresher Training Costs	This provides a summary total of OEPA's annual refresher training cost.
Total Administrative Costs	
Initial Certification Application Processing	This portion of the analysis calculates OEPA's annual cost to process initial certification applications annually by multiplying operators seeking initial certification by DDAGW's processing time per initial application.
Grading Exams	This portion of the analysis calculates OEPA's annual cost to grade exams by multiplying operators seeking initial certification by DDAGW's processing time per initial application. OEPA will grade all exams across all models.
Renewal Application Processing	This portion of the analysis calculates OEPA's annual cost to process renewal certification applications by multiplying operators seeking renewal certification (total operators needing CEUs divided by renewal period) by DDAGW's processing time per initial application.
Renewal Course Approval	This portion of the analysis calculates OEPA's annual cost to approve courses for CEU renewals. The DDAGW approval processing time per CEU was identified as a model. The percent of total CEUs approved by DDAGW was compared to the total CEUs needed by all operators. This ratio was applied to model CEU and approval needs. These two ratios are multiplied to determine a cost for processing enough approved CEU courses to meet model renewal requirements. This is also used to determine the cost to approve third-party course materials by multiplying the cost per CEU by the number of CEUs requiring approval .
Initial Course Approval	This portion of the analysis calculates OEPA's annual cost to third-party initial certification courses based on a per CEU cost. This cost is also used for approval of third-party course materials.
Exam Approval	This portion of the analysis calculates OEPA's annual cost to ensure third-party exams are sufficient to cover program material. DDAGW's third-party exam approval cost was identified as a model.
Confirmation Audits	This portion of the analysis calculates OEPA's annual cost to audit renewal application documentation. DDAGW's ratio of audits to renewals was calculated and then multiplied by annual operators seeking renewal. This number is multiplied by DDAGW's confirmation audit processing time to determine total cost.
Data Administration	This portion of the analysis calculates OEPA's annual cost to manage data, such as class lists and exam scores. Data administration cost per operator was determined for DDAGW and applied to DMWM operators.
Total Administrative Costs	This provides a summary of total administrative cost to OEPA to operate the program annually.
Total Other Labor Costs	
Indirect Labor Hours	This portion of the analysis calculates OEPA's cost incurred for the number of hours that a full-time employee (FTE) would spend working directly on program tasks and then computes indirect compensations for those hours (i.e.,: leave and breaks). This calculation assumes two OEPA personnel are required for presentations.
Non-Program Hours	This portion of the analysis calculates OEPA's cost to compensate 2.0 FTEs for time other than direct and indirect labor hours previously calculated.
Total Other Labor Costs	This provides a summary total of OEPA's annual other labor cost.
Total Annual Startup Costs	
Total Annual Operating Costs	This provides a summary total of OEPA's annual operating cost.

5. Solid Waste Fee Collection Operations

Section Overview

This section focuses on the Ohio Environmental Protection Agency's (OEPA or the Agency) Division of Materials and Waste Management's (DMWM or the Division) solid waste disposal fee collections and waste tonnage reporting and reconciliation process. This section is presented as two separate sub-sections of analysis including:

- **Tonnage and Fee Reporting Process**: The first analysis focuses on the current procedure for reporting and processing solid waste tonnage and identifies opportunities to improve efficiencies.
- **Tonnage and Fee Reporting Oversight**: The second analysis focuses on assessing the potential risk associated with oversight of the current tonnage and fee reporting process and identifies opportunities to mitigate these risks.

Recommendations Overview

Recommendation 5.1: OEPA should make operational improvements to its disposal fee and tonnage reporting system. It can do this in two ways: first, by combining pay-ins to the Treasurer of State for batches with the same fee type and pay-in codes; and second, by seeking ways to further encourage electronic reporting and payment. The first operational improvement will help to reduce the time that it takes to process single batch fees in the Agency-wide process. The second operational improvement will reduce the time it takes to process tonnage and fee reports by OEPA. Further, the use of electronic reporting and payments will continue to help the Agency's customers given the ease of access to historical information as well as the benefit of the automatic fee computation feature.

Financial Implication 5.1: N/A

Recommendation 5.2: OEPA should make operational improvements to its tonnage reporting oversight. In doing so, the Agency should utilize the information that is already being reported from the monthly disposal fees, annual facilities reports, and ad hoc tonnage updates received by DMWM to perform regular reconciliations. Furthermore, the Agency should implement a risk-based monitoring program for facilities that helps to ensure that the self-reported tonnage and fees are being properly recorded and remitted.

Financial Implication 5.2: By improving the internal reconciliation procedures and implementing a risk-based monitoring program for facilities, OEPA could reduce its risk exposure by $1,880,891 annually. Adjusting for the external auditor position necessary to administer the risk-based monitoring program, at a total cost of $68,567 annually, results in a net risk exposure reduction of **$1,812,324** annually.

Issue for Further Study

Issues are sometimes identified by OPT that are not related to the objectives of the audit, but could yield economy and efficiency if examined in more detail. During the course of the audit, the Division's tonnage and electronic fee reporting system was identified as one such area. This section will recommend further study due to the inefficiencies of not processing forms and reports electronically.

Section Background

The mission of DMWM is "To protect public health and the environment by promoting alternative waste materials management options that reduce reliance on landfills and ensuring that waste management facilities are constructed and operated in compliance with applicable laws and regulations and hazardous waste generators are in compliance with applicable laws and regulations." In order to fund the various regulatory and oversight activities associated with carrying out the Division's mission, OEPA is authorized to collect fees on solid waste and construction and demolition debris (C&DD)[42] transfer or disposal within the State. Solid waste fees are levied by the ton or, under certain conditions, by the cubic yard[43] and are assessed at either the point of transfer (i.e., a "transfer facility") or by the solid waste facility in the case of "direct haul".[44] C&DD fees are levied either by the ton or by the cubic yard, under the determination of the facility, and are assessed at the C&DD disposal facility.[45]

Solid Waste Fees Overview

The passage of House Bill (H.B.) 592 in 1988 established the first iteration of OEPA's solid waste disposal fee. The fee was originally used to fund hazardous waste oversight functions. OEPA switched to a fee based revenue system that replaced State General Fund appropriations during fiscal year (FY) 1994-95. During this switch the disposal fee's function expanded to include funding for solid waste oversight activities.

[42] Per ORC § 3714.01(C) "Construction and demolition debris" means those materials resulting from the alteration, construction, destruction, rehabilitation, or repair of any physical structure that is built by humans, including, without limitation, houses, buildings, industrial or commercial facilities, or roadways. "Construction and demolition debris" includes particles and dust created during demolition activities. "Construction and demolition debris" does not include materials identified or listed as solid wastes or hazardous waste pursuant to ORC Chapter 3734 and rules adopted under it; materials from mining operations, nontoxic fly ash, spent nontoxic foundry sand, and slag; or reinforced or non-reinforced concrete, asphalt, building or paving brick, or building or paving stone that is stored for a period of less than two years for recycling into a usable construction material.

[43] ORC § 3734.57(A)(4) allows facilities that do not use scales to determine gate receipts by using a conversion factor of three cubic yards per ton of solid waste. OAC: 3745-27-19(I) dictates that if a sanitary landfill facility has authorized maximum daily waste receipts greater than 2,000 tons per day then they shall use scales to determine gate receipts.

[44] Direct haul is OEPA terminology for all solid waste hauled directly to the solid waste facility rather than first to a transfer facility and then to the solid waste facility.

[45] ORC § 3714.07(A) allows C&DD facilities to report disposal by cubic yard rather than by ton. Currently, the fee per cubic yard is charged at half the rate of the fee per ton.

The first iteration of the solid waste fee included a tiered assessment based on whether the waste was generated in-district, out-of-district, or out-of-state.[46] The solid waste fee was modified in 1993 to remove the waste origination distinction and was replaced with a non-tiered fee structure that is still in place today. Though the non-tiered structure has remained the same, Ohio Revised Code (ORC) § 3734.57(A), which sets the actual fee rate, has been modified to increase the fee several times; in 1994, 2003, 2005, and most recently in 2009. Effectively, solid waste fees have increased from $1.00 per ton in 1993 to the $4.75 per ton currently in place.

Although the entire $4.75 per ton is collected by OEPA, $0.25 per ton is remitted to the Ohio Department of Natural Resources' (ODNR) Soil and Water Conservation District Assistance Fund. The portion of the fee remitted to ODNR is intended to fund Ohio's 88 soil and water conservation districts which plan, design, and construct conservation projects to reduce soil erosion and protect local water resources. The remaining $4.50 per ton is retained by OEPA and distributed across various funds including:

- **Hazardous Waste Facility Management Fund –** $0.30 per ton;[47] used by the Division to regulate hazardous waste facilities and provide technical assistance to the regulated community;
- **Hazardous Waste Clean-up Fund –** $0.70 per ton;[48] used by the Division of Emergency Response and Revitalization for the clean-up of contaminated sites and inspection, investigation and enforcement activities regarding hazardous waste treatment, storage, and disposal;
- **Solid Waste Fund –** $1.00 per ton;[49] used by the Division for administration and oversight of solid waste, infectious waste, and C&DD rules and regulations; and
- **Environmental Protection Fund –** $2.50 per ton;[50] used across the Agency to fund eleven separate budget line items.

[46] "District" is in reference to the facility's Solid Waste Management District. Per ORC § 3734.52 counties are required to be a part of a solid waste management district. These districts main function is to prepare and implement a solid waste management plan.

[47] In the current biennium budget bill, the Agency has requested that this fee be modified to $0.20 per ton effective July 1, 2015

[48] The $1.00 for hazardous waste was redistributed in 2013 from an original fifty-fifty split between the hazardous waste facility management fund and the hazardous waste facility clean-up fund.

[49] In the current biennium budget bill, the Agency requested that the distribution of the fees be simplified (for administrative and budgetary purposes) into one fund for solid waste and Cⅅ the Waste Management Fund. This change will not affect the current allowable use of the appropriations. The Agency has also requested that this fee be modified to $0.75 per ton effective July 1, 2015

[50] In the current biennium budget bill, the Agency has requested that this fee be modified to $2.85 per ton effective July 1, 2015

C&DD Fees Overview

Similar to solid waste fees, C&DD fees are intended to fund oversight activities and were created by the passage of H.B. 432 in 2005, and H.B. 66 in 2006. Since these bills were originally enacted the C&DD fee has remained constant at $1.70 per ton. The fee amounts are set under ORC § 3714.07, ORC § 3714.071, and ORC § 3714.073.

Although the entire $1.70 per ton is collected by OEPA, $0.25 per ton is remitted to ODNR's Soil and Water Conservation District Assistance Fund.[51] The portion of the fee remitted to ODNR is intended to fund Ohio's 88 soil and water conservation districts which plan, design, and construct conservation projects to reduce soil erosion and protect local water resources. The remaining $1.45 per ton is retained by OEPA and distributed across various funds including:

- **Construction and Demolition Debris Facility Oversight Fund** - $0.60 per ton;[52] used exclusively for the Division's cost to administer and enforce state C&DD regulations;
- **C&DD Ground Water Monitoring Fund** - $0.10 per ton;[53] used by the Division to cover the expense of monitoring groundwater at C&DD landfills;[54] and
- **Recycling and Litter Prevention Fund** - $0.75 per ton; used by the Agency to support two grant programs: one program is designed to provide financial assistance to local government projects involved in the collection and processing of recyclables and the other is for Ohio businesses that propose to create infrastructure necessary for successful recycling markets.

Prior to the implementation of the per ton fee, C&DD facilities were only subject to licensing fees. The change to a per ton fee was made with the intention of improving funding for licensing/oversight authorities to implement the C&DD program rules and regulations. Although, licensing/oversight is a statutory function of OEPA, ORC § 3714.09 allows the Director to approve health districts to administer and enforce rules and regulations for nonhazardous waste facilities within their districts. In this case the "approved health district" (AHD) becomes the licensing authority and retains up to $0.54 of the $0.60 per ton C&DD disposal fee and $0.08 of the $0.10 per ton ground water monitoring fee.

[51] Originally the bills called for $1.00 to go to ODNR. The Recycling and Litter Prevention Fund was redistributed in 2012 with OEPA taking over the program function and receiving the $0.75 per ton fee.

[52] In the current biennium budget bill, the Agency requested that the distribution of the fees be simplified (for administrative and budgetary purposes) into one fund for solid waste and Cⅅ the Waste Management Fund. This change will not affect the current allowable use of the appropriations.

[53] Per ORC § 3714.071 The ground water monitoring fee is collected only on C&DD waste disposed at C&DD facilities.

[54] The Agency is currently proposing a rule change that would temporarily waive collection of the ground water monitoring fee by the end of calendar year 2015. If enacted this waiver would be in effect through at least June 30, 2017.

Disposal Fee Revenues Overview

DMWM is responsible for collecting and recording waste disposal fees from solid waste and C&DD facilities. Although timely processing is important for all fees, disposal fees represent such a significant portion of OEPA's overall revenues (see **Table 5-1**) that their efficient processing is critical to the Agency.

ORC Chapter 3734: Solid and Hazardous Wastes and Chapter 3714: Construction and Demolition Debris require solid waste and C&DD facilities, respectively, to provide monthly disposal tonnage and associated fees to OEPA, or the AHD where applicable. Although the disposal tonnage and fees are required to be reported they are currently entirely self-reported.

Table 5-1 shows total disposal fees (solid waste and C&DD) as a percentage of total OEPA revenue for the last four complete fiscal years, fiscal year (FY) 2010-11 to FY 2013-14.

Table 5-1: Disposal Fees and Total Revenue FY 2010-11 to FY 2013-14

Fiscal Year	Total OEPA Revenue	Disposal Fee Revenue	Disposal Fee Revenue Percent of Total
FY 2010-11	$186,158,709	$64,368,348	34.6%
FY 2011-12	$168,309,886	$63,584,205	37.8%
FY 2012-13	$174,243,072	$67,285,991	38.6%
FY 2013-14	$167,994,313	$66,203,777	39.4%

Source: Ohio Administrative Knowledge System (OAKS)

As shown in **Table 5-1**, disposal fees amounted to $64,468,348 in FY 2010-11 and represented 34.6 percent of all OEPA revenues. Over the past four complete fiscal years, disposal fee revenue has remained relatively constant while total OEPA revenues have decreased by $18,164,396. The reduction in total Agency revenues has increased the proportion (up to 39.4 percent as of FY 2013-14), and thus importance, of disposal fee revenues to the Agency. However, the significance of the total revenue combined with the fact that these fees are self-reported increases the risk associated with this particular program.

Table 5-2 shows the distribution of disposal fees by type (i.e., MSW and C&DD) for the last four complete fiscal years, FY 2010-11 to FY 2013-14.

Table 5-2: Disposal Fees by Type FY 2010-11 to FY 2013-14

Fee Type	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14
Total Solid Waste Fee Revenue	$63,653,358	$62,900,355	$62,505,241	$61,735,067
Total C&DD Fee Revenue	$714,990	$683,850	$4,780,750	$4,468,710
Total Disposal Fee Revenues	**$64,368,348**	**$63,584,205**	**$67,285,991**	**$66,203,777**
Solid Waste Fees % of Total	98.9%	98.9%	92.9%	93.3%
C&DD Fees % of Total	1.1%	1.1%	7.1%	6.7%

Source: OAKS

A shown in **Table 5-2**, solid waste fees consistently represent the significant majority of disposal fees received. Although, within the last four complete fiscal years, solid waste fees have decreased as a percentage of total disposal fees received, from a high of 98.9 percent in FY 2010-11 and FY 2011-12 to a low of 92.9 percent in FY 2012-13. The decrease is largely attributable to the commensurate increase in C&DD fee revenues during FY 2012-13 and FY 2013-14 when OEPA began to receive $0.75 per ton on C&DD waste that formerly went to ODNR when the Recycling and Litter Prevention program was moved to OEPA. However, even with the increased C&DD revenue, solid waste still made up more than 93.3 percent of total disposal fee revenue in FY 2013-14.

The **Solid Waste Fee Collection Operations** section is presented as two separate sub-sections of analysis including:

- **Tonnage and Fee Reporting Process**: The first analysis focuses on the current procedure for reporting and processing solid waste tonnage and identifies opportunities to improve efficiencies.
- **Tonnage and Fee Reporting Oversight**: The second analysis focuses on assessing the potential risk associated with oversight of the current tonnage and fee reporting process.

R5.1 Tonnage and Fee Reporting Process

Background

ORC § 3734.57 governs the tonnage and fee reporting requirements for solid waste while ORC Chapter 3714: Construction and Demolition Debris governs these requirements for C&DD. Both require facilities to file tonnage reporting forms and submit fee payments to OEPA within 30 days of the end of the reporting month.[55] C&DD facilities that are under the oversight of an AHD also have 30 days to submit tonnage and fee reports, but are allowed an additional 45 days after initial receipt of payment for the AHD to remit those fees to OEPA.[56]

All types of facilities and AHDs are able to submit monthly tonnage reports using either paper forms or OEPA's e-business electronic reporting system (e-business software). Although DMWM staff encourages facilities to use the e-business software there is nothing in ORC or OAC which requires facilities to report using this method. Reporting facilities are able to access the e-business software through a secure login portal on OEPA's web site. The e-business software allows facilities to input the tonnage and then automatically calculates the fee payment associated with the reported tonnage. Once the tonnage is reported and the calculations are completed, reporting facilities have the option to either print the paperwork and send a check or they can use the system to submit the forms and use the electronic payment system. The electronic payment system allows facilities to either use a credit card or a checking account through an automated clearing house (ACH). The credit card payment requires the reporting facility to also pay a 2.2 percent service fee on the total payment amount. While the ACH does not have a fee it does require the operator to have a personal identification number (PIN). The PIN is required as a measure to confirm the identity of the payer. Regardless of the preferred payment method, facilities cannot use electronic payments unless they also submit reports using the e-business software.

Paper forms, accompanied by a check, are sent to OEPA's bank lockbox. The checks are deposited and the forms and check copies are batched for next business day delivery to OEPA. When forms and copies are batched by the bank they are sorted into batches based on payment type with high volume, not necessarily high dollar value, payments being segmented into color-coded batches while low-volume payments, such as disposal fees, are aggregated into miscellaneous batches prior to sending on to OEPA. Regardless of the batch type, the total number of payments is limited to 50 per batch. Fee forms OEPA receives in high volumes are sorted into their own batches as they share the same pay-in coding.[57]

As noted, disposal fees make up a large percentage of OEPA's total revenue but have a low number of forms so they are batched with other low volume fees. The Agency keeps every batch

[55] For example, tonnage and fees for June 2015 must be submitted to OEPA by July 30, 2015. Per ORC § 3714, there is an allowance that C&DD facilities may request to report fees quarterly instead. However, Division leadership was not aware of any C&DD facilities currently reporting on a quarterly basis.

[56] For example, tonnage and fees for June 2015 must be submitted to the AHD by July 30, 2015; subsequently, the AHD must remit fee for June 2015 to OEPA by September 13, 2015.

[57] A "pay-in" is when OEPA moves the deposited fees from a holding account at the Treasurer of State into the appropriate fund assigned to that revenue so that the revenue can be used.

together throughout the process to ensure that the batch total on the summary from the bank matches the batch total when these are processed for pay-ins. Batches are processed for pay-ins one at a time, even if there are multiple batches that day with the same fee type and thus the same pay-in codes.

Paper reporting forms that come in through the lockbox are required to be hand-entered into the e-business software, upon receipt, by OEPA's Office of Fiscal Administration (OFA) staff. When OFA staff enters the form data the system simultaneously creates corresponding revenue IDs in OEPA's revenue system. Once a batch is complete, forms are then sent to the Agency's Information Technology Services (ITS) where check data is hand-keyed into the revenue system using data entry software. Once keying is completed the batch is then moved back to OFA where the staff completes the revenue pay-in from the holding account to appropriate funds at the Treasurer of State. OFA estimated that this pay-in process normally takes a day to complete, but that during the peak season, November to May, there can be backlogs of two to four weeks for pay-ins to be completed.[58] Once this step is completed, reports are sent to the DMWM to be filed and finish out any residual processing.

See **Appendix 5.A: Tonnage Reporting and Fee Collection Process Map** for a graphical representation of the above tonnage and fee reporting process.

Methodology

This sub-section of the performance audit, **Tonnage and Fee Reporting Process**, focuses on the current procedure for reporting and processing solid waste tonnage and fee reports and identifies opportunities to improve process efficiencies. During the planning and scoping phase of this performance audit DMWM staff noted two important pieces of missing information within the current process. The first was whether AHDs were reporting and remitting fees in a timely manner, consistent with ORC requirements. The Division does not currently track or analyze this metric because there is no permissible late fee able to be applied to AHDs. The second was the distribution of forms types being received (i.e., electronic or paper).

Program information was provided by DMWM and supplemented by testimonial evidence from management and staff within the Division as well as within OFA. Sources of data and information include OEPA's e-business software[59], ORC requirements, and internal research. Data points used were from the last three complete fiscal years, FY 2011-12 to FY 2013-14. This section of the performance audit was specifically designed to evaluate current and historical operations. Primary analysis focused on FY 2013-14 data, but data points from FY 2011-12 and FY 2012-13 are also presented to provide historical context.

OEPA's e-business software and revenue system were reviewed to determine usability for analysis. During this review, weaknesses in revenue system capabilities were identified including

[58] Since the checks are deposited initially at the bank into a holding account there is not an issue with timely deposits.

[59] The e-business software does not have a report feature for tonnage. Separate, custom reports were developed by a former OEPA employee using InfoMaker software and these reports are used to pull out relevant e-business tonnage data into a usable form. The creator of these reports is no longer with OEPA.

the fact that the system does not currently provide reports that can be used to analyze how revenue and fees reconcile to the e-business system. When these concerns were raised with OEPA leadership, OFA, and DMWM all noted that the revenue system is aging, the system was estimated to be at least 15 years old, and it is a known problem that the system does not provide useful summary reports for transactions. It was also described by various Agency staff, and observed by OPT, to generally be cumbersome, time consuming, and difficult to use. As such, analysis focused on the reported tonnage as a proxy for fees as they are required to be reported at the same time.

E-business software reported tonnage data was analyzed for FY 2011-12 through FY 2013-14. The reported tonnage was sorted by fee type and whether it was sent from a facility in an approved (i.e., an AHD) or unapproved health district. Using the ORC requirements for reporting tonnage, late reporting and payment percentages were determined for solid waste and C&DD under direct OEPA oversight. The same was done for C&DD tonnage from AHDs. These were analyzed to determine late reporting and payment attributable to AHDs versus facilities, by extrapolating the observed facility late reporting and payment rate across AHD's and quantifying the remainder of the late reporting and payment.

The entry date information was also analyzed for each reported transaction. Differences between reporting and submittal date of greater than one were recognized as paper forms, due to the lockbox holding these forms overnight from when they are received. These were calculated for each transaction to determine the distribution of how reports were being received, either by electronic reporting or paper forms.

Finally, DMWM, OFA, and ITS provided insight on the timing and nature of day-to-day operations and processes to help clarify the tonnage and fee reporting process. This input was used to help develop an accurate process map for the tonnage and fee reporting process as well as to help determine areas for operational improvements.

Analysis

Part 1 – Late Tonnage Reporting and Payment

OEPA's e-business software automatically runs late fee calculations for the previous month on the eleventh day of the month following the reporting deadline.[60] However, AHDs are excluded from this automatic calculation due to the aforementioned 45-day timing allowance for reporting and payment. As such, DMWM does not have transparency into when reports are received at the AHDs, or whether AHDs are charging late fees.[61] Late reports and payments from AHDs were calculated using a static 75 day time frame. Then the percentage of late reporting and payment found from facilities was removed from AHDs overall late reporting and payment percentage. The remaining percentage of late reporting and payments was determined to be attributable to the AHDs.

[60] For example, tonnage and fees for June 2015 must be submitted to OEPA by July 30, 2015; the e-business software will automatically identify whether the reports and payments were late on August 11, 2015.

[61] While ORC § 3714.07 does permit AHDs to impose late fees in the same manner as it does OEPA, it is unknown if all AHDs actually collect these late fees when applicable as this was outside the scope of this performance audit.

Table 5-3 shows report and payment timing for solid waste and C&DD facilities in unapproved health districts as well as by AHDs for the last three complete fiscal years, FY 2011-12 to FY 2013-14. Further, **Table 5-3** estimates the percent of AHD reports and payments that have been late due to solid waste facility and C&DD landfill reporting and payment versus those that have been late due to AHD reporting and payment for the same time period.

Table 5-3: Late Tonnage Reporting and Payment FY 2011-12 to FY 2013-14

Solid Waste and C&DD Facilities in Unapproved Health Districts Reported				
Reports	**FY 2011-12**	**FY 2012-13**	**FY 2013-14**	**Average**
On-Time Reports	1,394	1,437	1,420	1,417
Late Reports	126	82	70	93
Total Reports	1,520	1,519	1,490	1,510
On-Time Reports Percentage	91.7%	94.6%	95.3%	93.8%
Late Reports Percentage	**8.3%**	**5.4%**	**4.7%**	**6.2%**
AHDs Reported				
Reports	**FY 2011-12**	**FY 2012-13**	**FY 2013-14**	**Average**
On-Time Reports	829	772	793	798
Late Reports	112	130	99	114
Total Reports	941	902	892	912
On-Time Reports Percentage	88.1%	85.6%	88.9%	87.5%
Late Reports Percentage	11.9%	14.4%	11.1%	12.5%
AHD Late Reporting Attribution Estimate				
Attribution	**FY 2011-12**	**FY 2012-13**	**FY 2013-14**	**Average**
Late Attributed to Facilities	8.3%	5.4%	4.7%	6.2%
Late Attributed to AHDs	**3.6%**	**9.0%**	**6.4%**	**6.3%**

Source: OEPA

Note: Though this table focuses on reports, the reports are being used as a proxy for payments, since they are required to be received at the same time in order to be processed, so this table effectively represents both reports and payments.

As shown in **Table 5-3**, solid waste and C&DD facilities in unapproved health districts submitted late reports and payments an average of 6.2 percent of the time over the three fiscal year period. Over the same time-period 12.5 percent of AHD tonnage reports and payments were identified as late. Applying the same known rate of late reporting and payments by facilities of 6.2 percent, the remaining 6.3 percent is estimated to be attributable to AHDs exceeding the 45 days allowed under ORC.

It should be noted that ORC incentivizes timely reporting and payments by offering solid waste facilities a discount of 0.75 percent of the total amount of the monthly fee required to be remitted to the Agency. OEPA is also authorized to levy a penalty of 10.0 percent of the amount of the monthly fee for facilities that report late; AHDs have commensurate authority to impose this

same late fee on facilities. However, OEPA has no authority to leverage or levy a late fee against AHDs that report late to the Agency as this is not expressly permitted within ORC.

The Ohio Department of Taxation (DOT) publishes figures for sales tax and commercial activity tax in each annual report. Sales and commercial activity tax are both taxes where businesses have to hold and remit tax to the government similar to facilities holding and remitting disposal fees. DOT's 2014 annual report includes figures for total payments as well as certified assessments, or those who owe taxes not paid in a timely manner. Sales taxes had a certified assessment rate of 9.0 percent in 2014 while the commercial activity tax had a certified assessment rate of 25.6 percent. OEPA is showing a better late reporting percentage for both facilities and AHDs by comparison.

Part 2 – Reporting Form Type Distribution

Table 5-4 shows the distribution of solid waste form types reported in OEPA's e-business system during the last three complete fiscal years, FY 2011-12 to FY 2013-14.

Table 5-4: Reporting Forms by Type FY 2011-12 to FY 2013-14

Form Type	FY 2011-12	FY 2012-13	FY 2013-14	Three-Year Average
Paper Forms	1,546	1,476	1,344	1,455
Electronic Forms	836	840	930	8,69
Total Forms	2,382	2,316	2,274	2,324
Paper Forms %	64.9%	63.7%	59.1%	62.6%
Electronic Forms %	35.1%	36.3%	40.9%	37.4%

Source: OEPA

As shown in **Table 5-4**, over the last three complete fiscal years tonnage reporting forms have averaged 62.6 percent paper and 37.4 percent electronic. While electronic forms have shown improvement over that time, an increase of 5.8 percent since FY 2011-12, paper forms still represented 59.1 percent of all disposal fee transactions in FY 2013-14.

Electronic processing presents an opportunity for significant process step reductions for OEPA. When processing reports and payments electronically, OEPA is able to reduce 10 of 16 process steps, or 62.5 percent, and 100 percent or 4 of 4 manual handoffs. These process improvements can reduce total processing time by up to 28.5 days.

For paper forms, OEPA could see improvement in the pay-in process section by combining the large volume forms' batches, batches of the same fee type, when doing their pay-ins as confirmed by the Treasurer of State during this performance audit. This would help improve processing time and alleviate backlog where it builds most readily during the busy season.

See **Appendix 5.A: Tonnage Reporting and Fee Collection Process Map** for a graphical representation of the above tonnage and fee reporting process.

See **Appendix 5.B: Fully Electronic Tonnage Reporting and Fee Collection Process Map** for a similar graphical representation that highlights the benefits associated with a fully electronic reporting and payment option.

Conclusion

The Division is receiving late reports at a rate below what other government agencies see from businesses that are required to remit payments. This is happening at a similar rate for both those who are subject to incentives or disincentives related to timely reporting and for those who are not. Additionally, the majority of tonnage reports are still being sent using paper forms. OFA is not currently combining pay-ins for batches of the same fee type for paper forms which would reduce time at a major choke point in the process. Furthermore, electronic forms have fewer processing steps and less manual touch points than paper forms so increased adoption among customers would result in more efficient and accurate processing for OEPA.

Recommendation 5.1: OEPA should make operational improvements to its disposal fee and tonnage reporting system. It can do this in two ways: first, by combining pay-ins to the Treasurer of State for batches with the same fee type and pay-in codes; and second, by seeking ways to further encourage electronic reporting and payment. The first operational improvement will help to reduce the time that it takes to process single batch fees in the Agency-wide process. The second operational improvement will reduce the time it takes to process tonnage and fee reports by OEPA. Further, the use of electronic reporting and payments will continue to help the Agency's customers given the ease of access to historical information as well as the benefit of the automatic fee computation feature.

Financial Implication 5.1: N/A

Issue for Further Study

Issues are sometimes identified by OPT that are not related to the objectives of the audit, but could yield economy and efficiency if examined in more detail. During the course of the audit, the Division's tonnage and electronic fee reporting system was identified as one such area.

Electronic Reporting and Payment Requirement: If OEPA and DMWM are unable to significantly increase the number of facilities that use electronic tonnage and fee reporting forms in lieu of paper forms through voluntary means, the General Assembly should consider granting OEPA the authority to mandate the use of electronic reporting. In doing so, OEPA and the General Assembly could consider a similar requirement to the one enacted in 2014 that all commercial activity tax payers file and pay electronically with the Ohio Department of Taxation.

R5.2 Tonnage Reporting Oversight

Background

Solid waste facilities are required by ORC § 3734.57 to report the tonnage and associated fees on a monthly basis to DMWM. These tonnages are self-reported by facilities and are not verified by OEPA unless there is need for an investigation. If investigation becomes necessary, Division staff will go to the facility and pull the daily activity logs. This source information should provide OEPA with a way to confirm the tonnage details that were reported, but this is a very time consuming activity due to the need to travel to the facility and access information directly.

If a facility self-identifies that it did not report the correct tonnage amount the first time it is able to send a letter to OEPA that attests to the reclassification of waste (i.e., that the tonnage should have been more or less than originally reported) and provides an updated report. In this case, DMWM will then make changes to the reported tonnage and process or refund fees as applicable.

DMWM also receives facility annual reports as required by OAC: 3734-27-19(M). These annual reports are required for all facilities and include a topographic map, a summary of daily logs, an estimate of remaining landfill facility life (e.g., remaining capacity), a summary of leachate collected and disposed, analytical testing of leachate samples, closure and post-closure cost estimates, a summary of maintenance performed on monitoring systems, and a notarized statement of accuracy. The summary of daily logs provides tonnage details for waste accepted at the facility based on waste type; including an identification of the waste that would have been subjected to fees for the previous year. Annual report information is collected by DMWM and retained in a database which is used by the Division for planning purposes (e.g., how the State plans to deal with waste disposal, recycling, etc. in the future). Information entered into the database from annual reports is treated as static information and is not updated to account for results of investigations or self-reported corrections as necessary. As a result, comprehensive reconciliation between the monthly and annual reports is not currently possible.

Methodology

This sub-section of the performance audit, **Tonnage and Fee Reporting Oversight**, focuses on the current procedures for reporting and reconciling solid waste tonnage and identifies opportunities to improve consistency. During the planning and scoping phase of this performance audit OEPA leadership expressed concern about the self-reported nature of the fees; specifically, whether or not the Agency is receiving the appropriate amount of disposal fee revenue.

Program information was provided by the DMWM and supplemented by testimonial evidence from management staff. Sources of data include OEPA's e-business software, the annual facilities report database, ORC requirements, and internal research. Data points used were from CY 2011 to CY 2013 as this was the most recent data available from all sources since annual reports are inherently backward looking. Finally, solid waste tonnage was used as the focus for this analysis because, as noted in **Table 5-2**, it makes up over 90.0 percent of disposal fees.

To facilitate analysis, solid waste datasets were aggregated and reconciled by facility for each calendar year. In order to accurately account for reported tonnage, monthly tonnage data for both landfills and transfer stations from e-business was reconciled to the tonnage in the annual facilities report database subject to solid waste fees by calendar year. Then the facility annual report database tonnages for landfills were broken down by whether the tonnage was direct hauled, which is subject to fees, or transferred. In the case of transferred, the fee would have already been paid at the transfer station. The remainder of the tonnage (i.e., landfill direct hauled and transfer stations) was then used as a measure of all tonnage subject to solid waste fees. This data was compared to the tonnage reported in e-business for each facility by calendar year.

The quantification of risk was then computed based on the identified discrepancies and the fee rate to show the total fee values at risk in the system. However, due to various ways that risk could be quantified, three scenarios were developed, including:

- **Net Difference in Reported Tonnage –** Discrepancies between the two reports were aggregated and analyzed by whether they were over- or under-reported based on net reconciliation to e-business.
- **Absolute Value of Difference in Reported Tonnage –** Discrepancies between the two reports were analyzed for each facility by whether they were over- or under-reported based on the absolute value of reconciliation to e-business for each individual facility.
- **Number and Percent of Total Facilities with Differences in Reported Tonnage –** Facilities were also analyzed to determine the number and percentage that were over reporting, under reporting, and reporting equal tonnages. In this case, under- or over-reporting constitutes risk while reporting equal tonnage appears to be correct. However, this assessment did not seek to, nor intend to, provide a full reconciliation and verification of the accuracy of these numbers.

Analysis

Table 5-5 shows the identified discrepancies between the aggregated tonnages reported in the annual reports and e-business software for CY 2011 to CY 2013 as well as the annual average. While each analysis is informative, the most meaningful analysis for the purpose of this performance audit is the Absolute Value of Difference in Reported Tonnage. This is due to the fact that each facility reports tonnage individually and so while a net difference in reported tonnage will show the dollar value of loss or gain by OEPA (as just one example) this significantly underrepresents the practical risk impact on each transacting party within the system.

Table 5-5: Annual Report Solid Waste Tonnage Compared to E-business Report Tonnage for All Tonnage Subject to Solid Waste Fees

Net Difference in Reported Tonnage				
	CY 2011	**CY 2012**	**CY 2013**	**Average**
Total E-biz Tonnage Over-Reported	101,813	371,519	68,578	180,637
Total E-biz Tonnage Under-Reported	(457,881)	(111,621)	(76,519)	(215,340)
Total	**(356,068)**	**259,898**	**(7,941)**	**(34,704)**
Absolute Value of Difference in Report Tonnage				
	CY 2011	**CY 2012**	**CY 2013**	**Average**
Total E-biz Tonnage Over-Reported	101,813	371,519	68,578	180,637
Total E-biz Tonnage Under-Reported	457,881	111,621	76,519	215,340
Total	**559,694**	**483,140**	**145,097**	**395,977**
Number of Facilities with Differences in Reported Tonnage				
	CY 2011	**CY 2012**	**CY 2013**	**Average**
Total E-biz Tonnage Over-Reported	34	42	37	38
Total E-biz Tonnage Under-Reported	44	35	42	40
Total Tonnage Equal	29	30	26	28
Total	**107**	**107**	**105**	**106**
Percent of Total Facilities with Differences in Reported Tonnage				
Total E-biz Tonnage Over-Reported	31.8%	39.3%	35.2%	35.8%
Total E-biz Tonnage Under-Reported	41.1%	32.7%	40.0%	37.7%
% of Facilities Under or Over-Reporting	**72.9%**	**72.0%**	**75.2%**	**73.6%**
% of Facilities with Equal Tonnage	**27.1%**	**28.0%**	**24.8%**	**26.4%**
Solid Waste Fee Risk Quantification				
Solid Waste Fee per Ton [1]	**$4.75**			
	CY 2011	**CY 2012**	**CY 2013**	**Average**
Over-Reported: Dollar Difference	$483,612	$1,764,715	$325,746	$858,026
Under-Reported: Dollar Difference	$2,174,935	$530,200	$363,465	$1,022,865
Total Solid Waste Fee Risk Quantification	**$2,658,547**	**$2,294,915**	**$689,211**	**$1,880,891**

Source: OEPA e-business software and OEPA annual facility reports database

[1] Solid waste per ton fee totals $4.75; whereas, $0.25 per ton is collected and remitted to ODNR with the remaining $4.50 per ton retained by OEPA.

As shown in **Table 5-5**, focusing on the absolute value of reporting differences, there has been an average absolute reported difference of 395,977 tons per year over the last three years available for analysis. In total, the average absolute value of the unreconciled risk is $1,880,891

annually. This is calculated by taking into account the absolute value of the average tonnage discrepancy over the three calendar year period and applying the $4.75 per ton fee.

While the average discrepancy gives an idea of how this variation has been spread across the three year time frame, it is important to note that CY 2011 and CY 2012 experienced larger tonnage discrepancies than CY 2013. However, without regular, or at least annual, oversight into reporting discrepancies DMWM is unable to assess or verify the extent to which these risks are real and/or being realized. Moreover, given the financial value of the identified discrepancies and the high percentage of facilities with reporting discrepancies, on average 74.6 percent, between monthly and annual reported tonnage the risk is significantly increased and the extent of risk goes well beyond a few select facilities. Finally, of the 319 discrepancies identified and analyzed, 83, or 26.0 percent, were greater than 1,000 tons.

During the course of the audit, several significant discrepancies were identified and brought to DMWM staff for further review. In each case Division staff were able to provide plausible explanations for the discrepancies, but, as they are self-reported by the facilities, the explanations are not able to be fully verified. This exercise identified that there are some known and/or explainable differences, but that they are not being reconciled by Division staff. Routine identification of reporting differences coupled with regular reconciliation would provide OEPA and Division leadership with a better sense of the nature of discrepancies and whether or not additional investigative action is appropriate. However, since the tonnage is self-reported in both cases, being able to determine explainable from unexplainable discrepancies on a regular basis would still limit OEPA to being able to identify reporting consistency issues, but not necessarily reporting integrity issues.

Risk Based Monitoring Program

As previously noted, not only are the monthly reports self-reported, but so are the daily logs which would be used to verify the monthly reports. Furthermore, the Division is not currently performing a regular audit or reconciliation procedure between the two sources of readily available tonnage data (monthly and annual reports).

These same conditions were identified by the Office of Budget and Management's, Office of Internal Audit (OIA) in a 2011 consulting engagement. This consulting engagement focused on DMWM (then known as the Division of Solid and Infectious Waste Management) fee collections. OIA's stated purpose of the engagement was "assisting [the Division] with devising a framework [for] conducting monitoring of self-reported fees by waste and landfill facilities across the state." Within the memorandum, OIA noted that facility inspections lacked a fiscal component to confirm proper reporting and collection of fees. The memorandum recommended OEPA establish a risk-based monitoring program to ensure that all fees are being properly recorded and collected.

The memorandum documented example auditing procedures for monitoring facilities fees with a risk-based oversight model. This includes the development of an annual plan which should include components that evaluate the material significance of collected fees, perform preliminary and annual report reconciliation procedures, analyze available resources and capacity, evaluate

the incremental risk each facility contributes to the overall program, identify facilities and create a schedule for desk reviews and field audits, and establish reporting and milestone timelines on which to evaluate the effectiveness of the planned procedures. Implementing a monitoring program like this would significantly help to mitigate the risk associated with the current self-reported tonnage and fees that account for such a large portion of OEPA's total revenue.

Based on OIA estimates, implementation of a risk-based monitoring program would require OEPA to hire one full-time auditing position. According to the Ohio Hiring Management System an entry-level external auditor 3 position would cost the Agency approximately $49,650 in base salary with an additional $18,917 in benefits.[62] In total, this external auditing position would cost OEPA $68,567 annually.

Since the completion of OIA's consulting engagement DMWM has attempted to fill multiple positions to meet the identified need. One attempt was to create an external auditor position while the other was to create a budget analyst position. Both would have had risk-based auditing duties, such as those outlined in this analysis; however, the budget analyst position would have also been responsible for limited financial duties. Regardless, both attempts to fill positions addressing the identified need were unsuccessful as the Division was unable to recruit and hire a qualified candidate.

Conclusion

OEPA is currently unable to verify whether it is receiving the appropriate amount of disposal fee revenue because all currently available information is self-reported. Further, the Agency does not engage in regular reconciliation of available information or audits of reported information unless a special investigation is required. Lack of curating available data to provide reconciled tonnage data impedes OEPA and Division leaderships' ability to determine if and when significant issues and risks are present. Reconciling these reports on a routine basis would help to mitigate a portion of the risk; however, the remainder of the risk can be most effectively mitigated through a risk-based monitoring program. This risk-based monitoring program would help to further mitigate risk by actually evaluating the accuracy of the source, self-reported data.

Recommendation 5.2: OEPA should make operational improvements to its tonnage reporting oversight. In doing so, the Agency should utilize the information that is already being reported from the monthly disposal fees, annual facilities reports, and ad hoc tonnage updates received by DMWM to perform regular reconciliations. Furthermore, the Agency should implement a risk-based monitoring program for facilities that helps to ensure that the self-reported tonnage and fees are being properly recorded and remitted.

Financial Implication 5.2: By improving the internal reconciliation procedures and implementing a risk-based monitoring program for facilities, OEPA could reduce its risk exposure by $1,880,891 annually. Adjusting for the external auditor position necessary to administer the risk-based monitoring program, at a total cost of $68,567 annually, results in a net risk exposure reduction of **$1,812,324** annually.

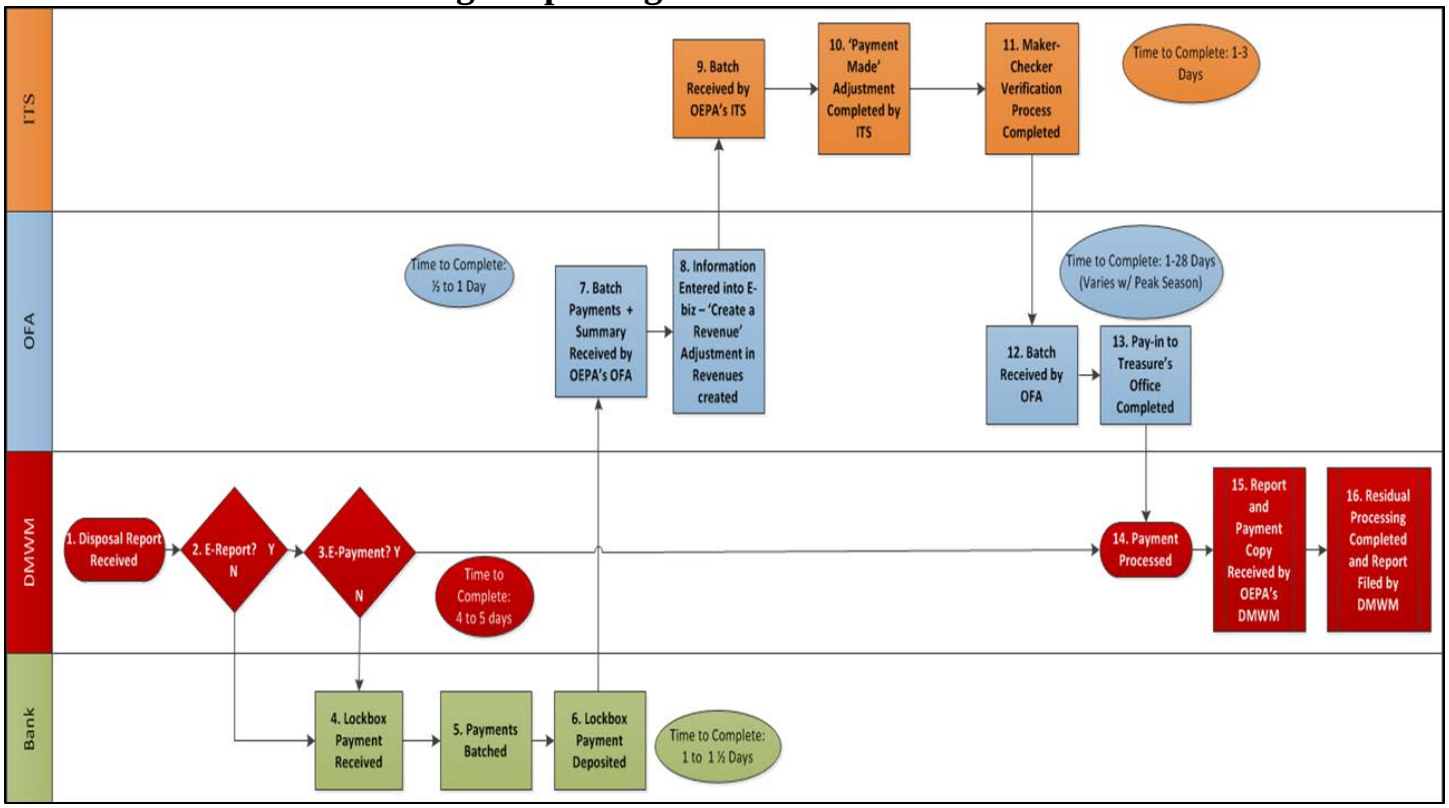
[62] Benefits are calculated based on OEPA's average benefits rate of 38.1 percent.

Appendix 5.A: Tonnage Reporting and Fee Collection Process Map

The following process map shows a graphical representation of the current tonnage and fee reporting process. In total, the current process has 16 steps, 4 hand-offs, and 2 decision points. Completing the current process can take between 3.5 and 33.5 days depending on time of year and existing system backlog.

The electronic portion of the current process is represented by steps 1 through 3 and 14 through 16. Implementing a fully electronic reporting and fee collection process can significantly improve process efficiency and reduce overall process time (see **Appendix 5.B**).

Tonnage Reporting and Fee Collection Process

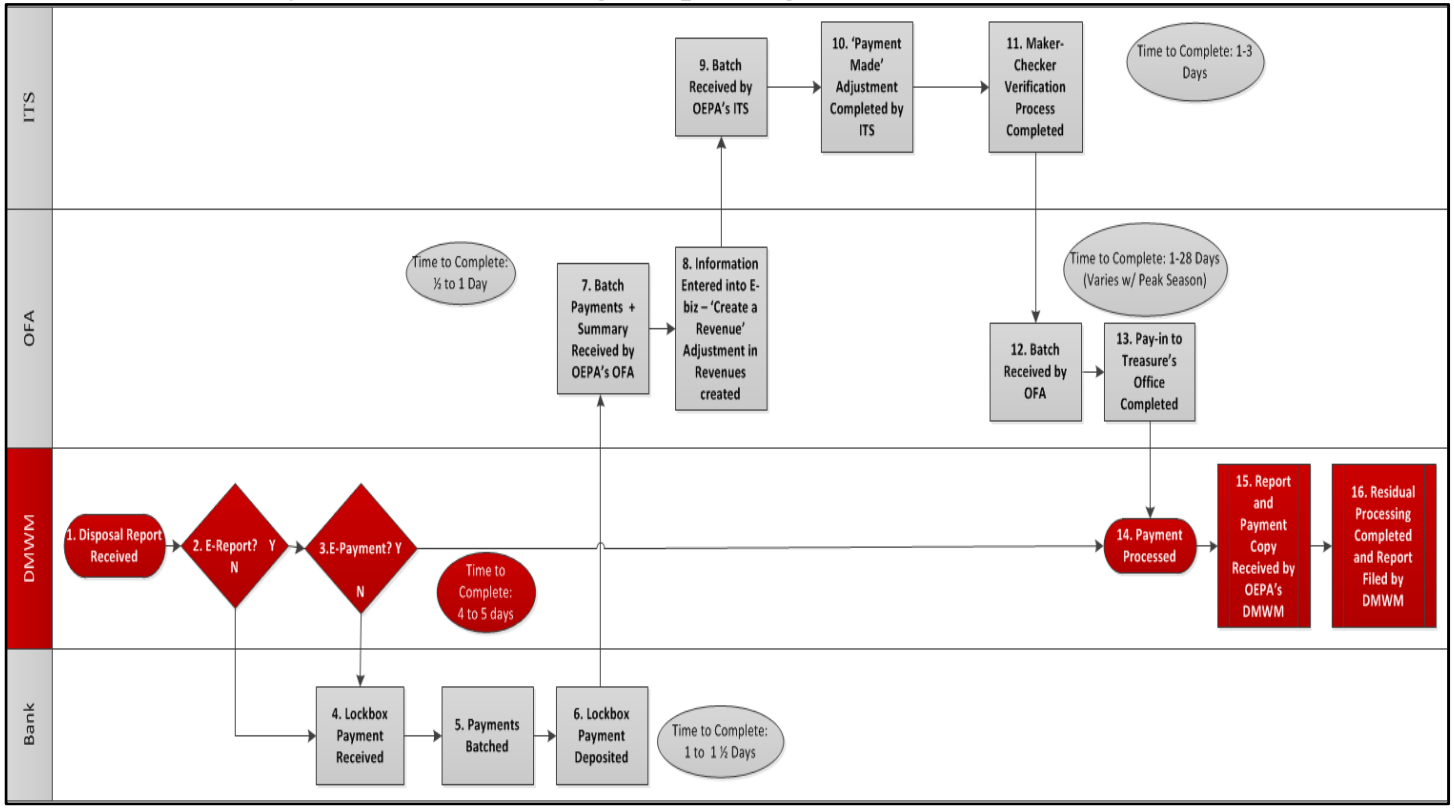


Appendix 5.B: Fully Electronic Tonnage Reporting and Fee Collection Process Map

The following process map shows a graphical representation of the fully electronic tonnage and fee reporting process. The fully electronic process is represented by steps 1 through 3 and 14 through 16. The paper-based portions of the current process are grayed-out in this graphic to help illustrate the differences between the current process and the fully electronic process and to highlight the overall process reduction opportunity.

In total, the fully electronic process has 6 steps, 0 hand-offs, and 2 decision points. Completing the full process can take between 4.0 and 5.0 days and does not result in any backlog regardless of time of year or processing volume.

Fully Electronic Tonnage Reporting and Fee Collection Process



VII. Audit Scope and Objectives Overview

Generally accepted government auditing standards require that a performance audit be planned and performed so as to obtain sufficient, appropriate evidence to provide a reasonable basis for findings and conclusions based on audit objectives. Objectives are what the audit is intended to accomplish and can be thought of as questions about the program that the auditors seek to answer based on evidence obtained and assessed against criteria.

AOS and OEPA signed a letter of engagement effective November 21, 2014. The original letter of engagement led to OPT planning and scoping work, in consultation with OEPA, which identified five distinct scope areas including:

- **Fleet Management**
- **Laboratory Operations**
- **Certified Professionals**
- **Solid Waste Operator Certification**
- **Solid Waste Fee Collection Operations**

Based on the agreed upon scope, OPT developed objectives designed to identify improvements to economy, efficiency, and/or effectiveness. **Table VII-1** shows the objectives assessed in this performance audit and references the corresponding recommendation(s) when applicable.

Table VII-1: Audit Objectives and Recommendations

Objective	Recommendation(s)
Fleet Management	
What opportunities exist for OEPA to improve its fleet management efficiency and/or effectiveness in relation to industry standards and/or leading practices?	**R1.1, R1.2, & R1.3**
Laboratory Operations	
What opportunities does OEPA have to maximize the value of the services currently provided by the Division of Environmental Services in relation to leading practices and/or industry standards?	**R2.1**
Certified Professionals	
What opportunities exist for the water quality certification and permitting process to improve efficiency and effectiveness in relation to industry standards and/or leading practices?	**R3.1 & R3.2**
Solid Waste Operator Certification	
What opportunities exist to develop a solid waste operator certification program that optimizes efficiency and effectiveness in relation to industry standards, leading practices, and/or alternate operating models?	**R4.1**
Solid Waste Fee Collection Operations	
What opportunities exist for the DMWM disposal fee collection operation to improve efficiency and effectiveness in relation to industry standards and/or leading practices?	**R5.1 & R5.2**

VIII. Abbreviated Terms and Acronyms

ACH - Automated Clearing House
AHD - Approved Health District
AOS - Auditor of State
ATD - Association of Talent Development
BLS - United States Bureau of Labor Statistics
C&DD - Construction and Demolition Debris
CDAO - Construction and Demolition Association of Ohio
CEU - Continuing Education Unit
CP - Certified Professional
CPM - Cost per Mile
CWA - Clean Water Act
CY - Calendar Year
CYTD - Calendar Year-to-Date
DAPC - Division of Air and Pollution Control
DAS - Ohio Department of Administrative Services
DDAGW - Division of Drinking and Ground Waters
DERR - Division of Environmental Response and Remediation
DES - Division of Environmental Services
Director - Director of Environmental Protection
DMWM or the Division - Division of Materials and Waste Management
DOIR - District Office Investigation Report
DOT - Ohio Department of Taxation
DSW - Division of Surface Water
DW - Drinking Water
E-Business Software - E-Business Electronic Reporting System
ERU or the Unit - Emergency Response Unit
FTE - Full-Time Employee
FY - Fiscal Year
FYTD - Fiscal Year-to-Date
GAGAS - Generally Accepted Government Auditing Standards
GPS - Global Positioning System
GW - Ground Water
H.B. - House Bill
ITS - Information Technology Services
IWP - Isolated Wetland Permit
Laboratory Certification - Drinking Water Laboratory Certification
LIMS - Laboratory Information Management System
MOA - Memorandums of Agreement
MPG - Miles per Gallon
NADA - National Auto Dealers Association
NPMAC - National Performance Management Advisory Commission
OAC - Ohio Administrative Code

OAKS - Ohio Administrative Knowledge System
OCSEA - Ohio Civil Servants Employee Association
ODA - Ohio Department of Agriculture
ODH - Ohio Department of Health
ODNR - Ohio Department of Natural Resources
OEPA or the Agency - Ohio Environmental Protection Agency
OFA - Office of Fiscal Administration
OIA - Office of Internal Audit
Ontario or the Province - Province of Ontario, Canada
Operations - Office of Operations and Facilities
OPT - Ohio Performance Team
ORC - Ohio Revised Code
OSC - On-Scene Coordinator
OSI - Office of Special Investigations
PIN - Personal Identification Number
PWS - Public Water System
RCRA - Resource Conservation and Recovery Act
RP - Responsible Party
SW - Municipal Solid Waste
SWANA - Solid Waste Association of North America
SWIMS - Surface Water Information Management System
TAS - Time Accounting System
The Unit - Water Quality Certification and Isolated Wetland Permitting Unit
USACE - United States Army Corp of Engineers
USEPA - United States Environmental Protection Agency
VAP - Voluntary Action Program
VOIP - Voice Over Internet Protocol
WQC - 401 Water Quality Certification

IX. OEPA Funding Category Descriptions

Descriptions for funding categories shown in **IV. OEPA Overview**, **Table IV-2** include:

- **Air Pollution Control –** This funding category encompasses funding for the Division of Air Pollution Control, which maintains air quality levels and performs all functions necessary to comply with the federal Clean Air Act.
- **Drinking and Ground Waters –** This funding category encompasses funding for the Division of Drinking and Ground Waters, which protects groundwater quality and ensures safe drinking water.
- **Environmental Response and Revitalization –** This funding category encompasses funding for the Division of Environmental Response and Revitalization, which responds to and monitors the cleanup of sudden releases of hazardous and radioactive materials.
- **Materials and Waste Management –** This funding category encompasses funding for the Division of Materials and Waste Management. The Division regulates facilities that treat, store, transport, or dispose of hazardous waste and ensures proper management of solid waste through regulating solid waste landfills, transfer facilities, or composting facilities. It also has responsibility for establishing and implementing statewide waste reduction, recycling, recycling market development, and litter prevention programs for nonhazardous wastes.
- **Surface Water Protection –** This funding category consists of line items that fund the Division of Surface Water, which is responsible for restoring and maintaining the quality of rivers and streams for human and industrial uses.
- **Environmental Services –** This funding category consists of line items that primarily fund the Division of Environmental Services, which provides laboratory services to other OEPA divisions, state and local agencies, and private entities.
- **Environmental and Financial Assistance –** This funding category consists of line items that fund the Division of Environmental and Financial Assistance, which administers two revolving loan funds for municipal wastewater treatment projects and other projects improving water quality and drinking water projects.
- **Program Management –** This funding category includes the activities and services responsible for directing, coordinating, assisting, and guiding all of OEPA's divisions and specialized offices. Included herein are the Director's office, employee services, a public interest center, fiscal administration, technology services, legal services, and employee safety and health programs.
- **Environmental Education –** This funding category consists of money that primarily funds the Office of Environmental Education and the Office of Compliance Assistance and Pollution Prevention.
    - The Environmental Education Office administers the Ohio Environmental Education Fund, which awards up to $1.0 million in grants annually, the Ohio Clean Diesel School Bus Fund, the Diesel Emission Reduction Grant Program, and a series of recycling grants for the Division of Materials and Waste Management.
    - The Office of Compliance Assistance and Pollution Prevention provides confidential technical assistance to businesses on pollution prevention and compliance issues.

X. OEPA Response

The letter that follows is OEPA's official response to the performance audit. Throughout the audit process, staff met with Agency officials to ensure substantial agreement on the factual information presented in the report. When the Agency disagreed with information contained in the report and provided supporting documentation, revisions were made to the audit report.

Ohio Environmental Protection Agency

John R. Kasich, Governor
Mary Taylor, Lt. Governor
Craig W. Butler, Director

June 29, 2015

David Yost
Auditor of State
88 East Broad St., 5th floor
Columbus, Ohio 43215

Dear Auditor Yost:

Ohio EPA would like to thank you and your staff for identifying opportunities for improvement. I greatly appreciate your willingness to focus on areas the Agency is looking to improve.

The depth of review and effort your staff put in to this audit and statistical data that was created to support your recommendations is impressive. It is the kind of data I was looking for to guide decisions on potential changes we are seeking to make within the Agency.

We've reviewed your recommendations and have identified valuable opportunities for Ohio EPA to do business more efficiently in the future. We will continue to review and study your recommendations with a view toward making improvements at Ohio EPA that will improve our performance and enhance our ability to protect Ohioans and the environment.

Respectfully,

Craig W. Butler
Director