2020 Ecosystem Compensation Program Summary Report

Prepared by TRCA Ecosystem Compensation Program Review Team

January 2021

Executive Summary

Toronto and Region Conservation Authority (TRCA) formally adopted the Guideline for Determining Ecosystem Compensation in June 2018 (RES.#A85/18). Following adoption, the Ecosystem Compensation Management Framework, which outlines how the workflow and allocation of compensation funds should be governed, was finalized in June 2019. The Ecosystem Compensation Management Framework recommends regular reporting to identify how well TRCA is meeting the goals and metrics that track performance. The first program summary was provided to the TRCA Board of Directors in 2019 (RES.#B120/19) and future reports are to be prepared annually to discuss TRCA's progress in relation to governance goals and reporting metrics laid out in the Framework in addition to highlighting yearly compensation activity and recommendations. It is important to note that this reporting only covers compensation for losses that have been applied through the planning process and where TRCA has received cash-in-lieu funding for restoration implementation. Instances where compensation is not achieved on a planning file or where compensation is applied and implemented by agencies other than TRCA are not captured in this assessment.

Since 1994, TRCA has implemented 48% of the compensation projects being tracked; an additional 33% have restoration being actively planned or are in an implementation phase; and the remaining 19% are currently in negotiation, on hold, or cancelled. When compared to 2019 numbers, there is a 17% increase in restoration projects being planned in 2020 and a 32% increase in restoration project implementation.

Between 2017 and 2020, TRCA received $9,649,000 in compensation funds for natural feature restoration and land acquisitions, of which $8,311,000 is projected to be expended by the end of 2020, while the remaining funds are allocated for future implementation, monitoring, and maintenance. Of these projects, 93% were implemented in the same municipality as the impact, and 87% were implemented in the same watershed. In 2020, TRCA received $3,034,000 in compensation funds from 16 compensation projects and will be using $3,089,000 to implement 16 restoration projects. Of the restoration projects implemented in 2020, 100% were in the same municipality as the impact, and 83% were in the same watershed.

This report shows that for the subset of losses where compensation was applied and funds were received as cash in-lieu (2017-2020), there is a projected net gain for terrestrial natural features (14.0 hectares). However, we see a net loss projected for meadow (-11.1 hectares) and stream habitats (-7.4 linear metres) due to undervaluing the true cost to restore these features. To address this, TRCA has updated restoration estimate costs with 2020 rates to be used in future discussions and will look for ways to continue to meet current habitat requirements with project efficiencies and leveraged funds.

Outside of a few exceptions, TRCA has met the restoration implementation timelines establish in the 2019 summary report. With this report TRCA demonstrates that the program successfully manages compensation as an effective tool resulting in increasingly positive outcomes. TRCA's compensation program has proven to be a model that can be applied by municipalities, Conservation Authorities and other partner agencies.

Several recommendations have been identified that will refine and improve the way the Ecosystem Compensation Program functions, including improvements to communications internally and externally, standardized agreements, data tracking and reporting, and updated restoration cost estimates.

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BACKGROUND

Guideline for Determining Ecosystem Compensation

In June 2018, TRCA Board of Directors approved the adoption of the Guideline for Determining Ecosystem Compensation (RES.#A85/18) (hereafter referred to as the "Guideline"). The purpose of the Guideline is to provide guidance on how to determine the total amount of compensation required to replace lost or altered ecosystems in a consistent and transparent manner, after it has been decided through the planning or environmental assessment process that unavoidable losses will or must take place. The Guideline is written to assist planners, ecologists, landscape architects, landowners, engineers, and other practitioners and interested parties in understanding how compensation for ecosystem losses can be implemented. Promoting strategic and effective implementation of compensation restoration, the Guideline provides a standard and consistent approach, informed by science and decades of experience in the application of natural heritage planning and ecological restoration.

Ecosystem Compensation Management Framework

The Ecosystem Compensation Management Framework (June 2019) (hereafter referred to as the "Framework") outlines goals as well as the tools and processes needed to ensure an accountable, transparent, consistent, efficient, and adaptable approach to managing TRCA's Ecosystem Compensation Program. The Framework should be applied to all cases where funds are directed to TRCA via an approved agreement for implementing feature-based restoration and conservation land securement. The agreement would typically be an outcome of the municipal planning process; environmental assessment process; municipal tree/forest/natural feature by-laws implementation; Local Planning Appeal Tribunal (formerly the Ontario Municipal Board) agreements and orders; Ministry of the Environment, Conservation and Parks (MECP) Species at Risk (Overall Benefit) Permits; Department of Fisheries and Oceans Canada (DFO) Fish Habitat Compensation; or other processes (e.g., National Energy Board decisions).

The Framework uses existing tools including the Restoration Projects Database and Compensation Database, along with existing approaches TRCA has developed for effective project and program management. This Framework provides direction in situations where TRCA receives funds to implement ecosystem compensation, however, it also recognizes the collaborative nature of the compensation process, the varying roles of the parties involved, and the need for coordination, particularly with TRCA's municipal partners. Although this Framework focuses on TRCA's role in managing the Ecosystem Compensation Program, the tools and approaches can also be adapted by others for managing compensation decisions and actions for implementation and tracking.

The Framework also defines two key groups in the Ecosystem Compensation Program. The first is a Project Review Team; one team is established for each file to review and approve proposed land development and infrastructure projects. This team consists of external partners (where appropriate) as well as TRCA staff from several business units including Development Planning and Permits, Infrastructure Planning and Permits, Engineering Services, Planning Ecology, Restoration and Resource Management, Finance, and Property and Risk Management. The second team is the Ecosystem Compensation Program Review Team, which is tasked with evaluating and reporting on the effectiveness of the overall Ecosystem Compensation Program approach as well as providing comment on individual projects that are very complicated or contentious. This team will consist of staff representing Development Planning and Permits, Infrastructure Planning and Permits, Policy Planning & Regulations, Planning Ecology, Restoration and Resource Management, Finance, and Property and Risk Management. To achieve efficiencies, both teams will aim to use the same staff for the duration of each project to ensure knowledge continuity.

Ecosystem Compensation Program Reporting

TRCA prepared the first annual Ecosystem Compensation Program Summary Report in 2019 (RES.#B120/19). Regular reporting will be brought to the TRCA Board of Directors to summarize the status of all ecosystem compensation projects implemented by TRCA, provide an update on the program (successes and challenges), and outline recommendations for future program improvements. This regular reporting will continue on an annual basis. In exceptional cases, such as high-profile projects, staff may report on compensation elements of projects separately. (Such projects would still be included in the annual reporting.) This report is the second iteration of this annual reporting.

RATIONALE

Ecosystem Compensation Management Framework Goals

Below are the goals that guide the Framework. The goals have been adapted from the guiding principles outlined in the Guideline.

1. There is no net loss (and ideally a net gain) to the natural heritage system function due to impacts associated with land use changes or development and infrastructure impacts within the TRCA jurisdiction;
2. TRCA is accountable in the delivery of its compensation program;
3. The compensation process is transparent and traceable;
4. The compensation process is consistent;
5. The compensation process is efficient and timely; and
6. An adaptable approach to management is regularly used to ensure that deficiencies are identified and recommendations for improvement are implemented.

These goals guide the reporting on the performance of the Ecosystem Compensation Program, which is presented in the following section.

GOALS: 2020 DETAIL ON STATUS

Ecosystem Compensation Program Summary

The information in this summary report was taken from TRCA's Compensation Database. The Compensation Database contains information collected by the Project Review Teams. Over the course of 2020, the database was updated with outstanding file information on completed compensation projects to provide a more holistic view of the Ecosystem Compensation Program at TRCA.

Figure 1, Location and Current Status of TRCA Compensation Projects, maps the location of impacts or feature losses and compensation restoration projects across the jurisdiction from 1994 to 2020. These impact sites are symbolized by circles of assorted colours indicating their compensation status (inactive, in negotiations, or at various stages of planning, restoration, or completion). The restoration sites are symbolized as pink dots and are linked with a red line

to the associated impact sites. The map demonstrates that although restoration is targeted as close to the impact site as possible, other considerations are involved in siting decisions to ensure the maximum ecological benefit is achieved. Such considerations include TRCA's Integrated Restoration Prioritization (IRP) tool, coordination of leveraged opportunities with partners, availability of appropriate sites for restoration, and implementation timelines. Older projects that started before the Guideline and Framework may be farther from the impact site or cross boundary lines between municipalities or watersheds. In 2020, there were 16 new impact sites added to the map (Figure 2). 2020 also saw 16 restoration projects implemented and 52 restoration projects in other phases of completion from planning to monitoring and maintenance.

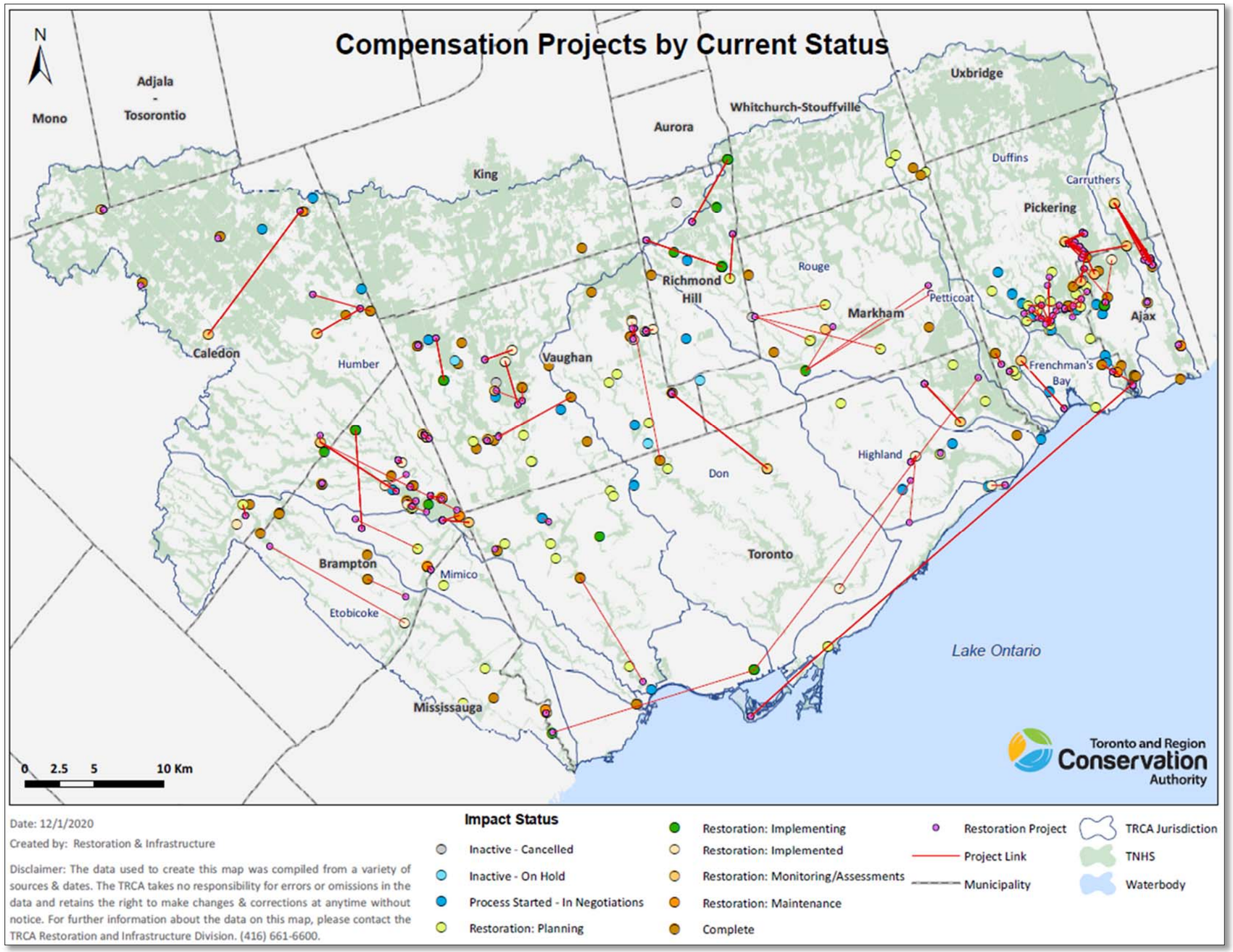

FIGURE 1. LOCATION AND CURRENT STATUS OF COMPENSATION PROJECTS 1994-2020

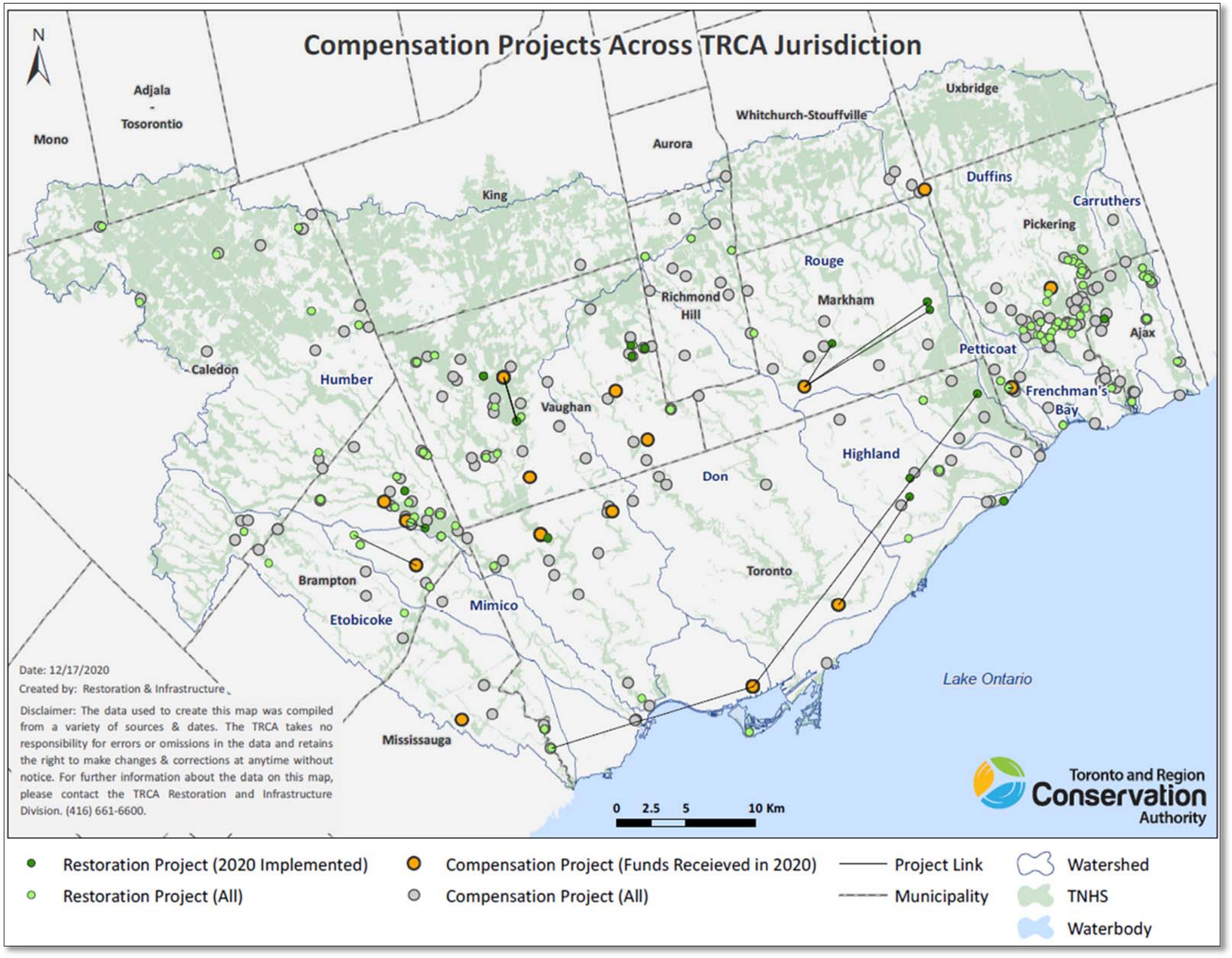

FIGURE 2. 2020 COMPENSATION PROJECTS ACROSS TRCA JURISDICTION

Figures 3 and 4, Compensation Projects (1994-2020) by Current Status, illustrate where projects are in the compensation process. Note: the colour coding in Figure 1 corresponds to the colour coding in Figures 3 and 4. Currently, 48% of the compensation projects where cash-in-lieu has been received have been implemented (**orange** colours); 33% are being actively planned or are in an implementation phase (**green** colours); and the remaining 19% are currently in negotiation, on hold, or cancelled (**blue** & **grey** colours).

When compared to 2019 numbers, there is a 17% increase in projects being planned, and a 32% increase in project implementing (projects in the first year of implementing a multiyear project) and being implemented (projects where implementation of the main restoration activity was completed). Completed project numbers cannot be compared to 2019, as the numbers will be skewed by the recent addition of some older data. The inclusion of this older data gives a more complete picture of the Ecosystem Compensation Program.

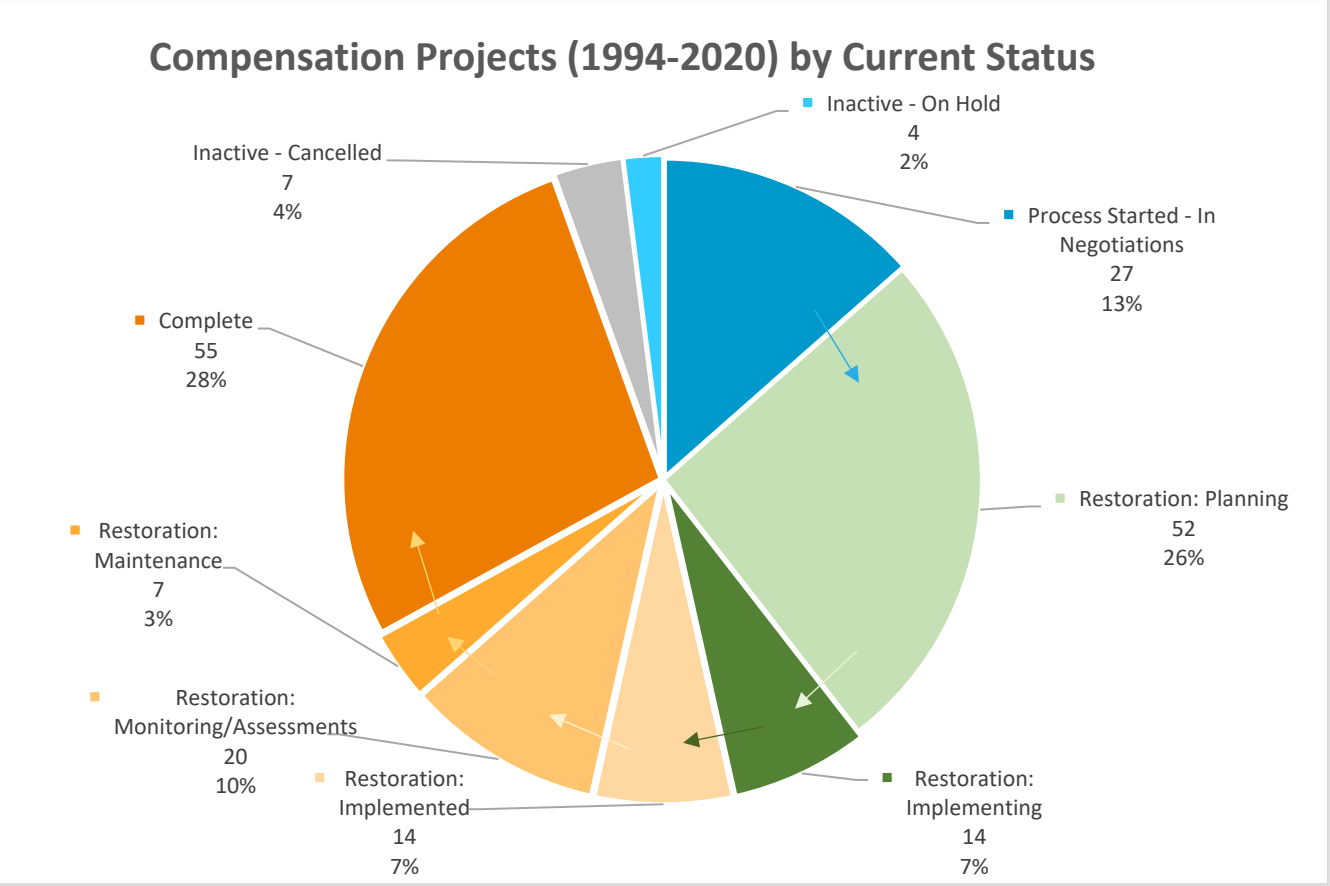

FIGURE 3. PIE CHART: COMPENSATION PROJECTS (1994-2020) BY CURRENT STATUS

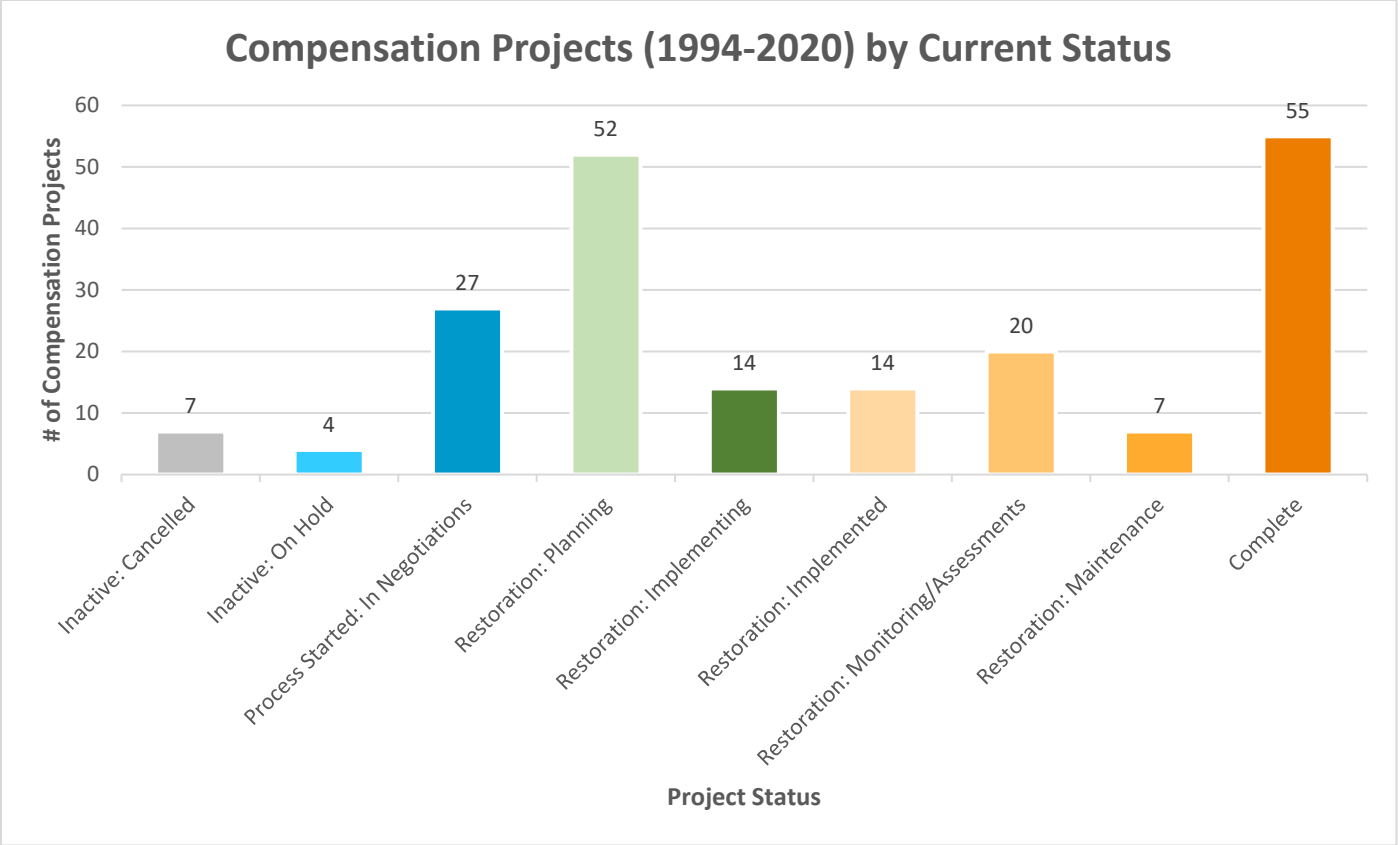

FIGURE 4. BAR GRAPH: COMPENSATION PROJECTS (1994-2020) BY CURRENT STATUS

Figure 5, Compensation Revenue and Expenditures (2017-2020), shows compensation funds received by TRCA as cash-in-lieu and expenditures to implement restoration projects. Between 2017 and 2020, TRCA received $9,649,000 in compensation funds for natural feature restoration and land acquisitions, of which $8,311,000 is projected to be expended by the end of 2020, while the remaining funds are allocated to be used for future implementation, monitoring, and maintenance. In 2020, TRCA received $3,034,000 in compensation funds and will be using $3,089,000 for restoration implementation.

Figure 4 demonstrates that funds received by TRCA as cash-in-lieu and restoration expenditures are increasing over time. This does not necessarily indicate that approval authorities are permitting more feature removals with compensation, but rather that the full cost of restoration and land acquisition is now better accounted for and agreed

to by all parties during negotiations. The graph also demonstrates the unpredictable nature of compensation funding: cash-in-lieu is higher in some years than others.

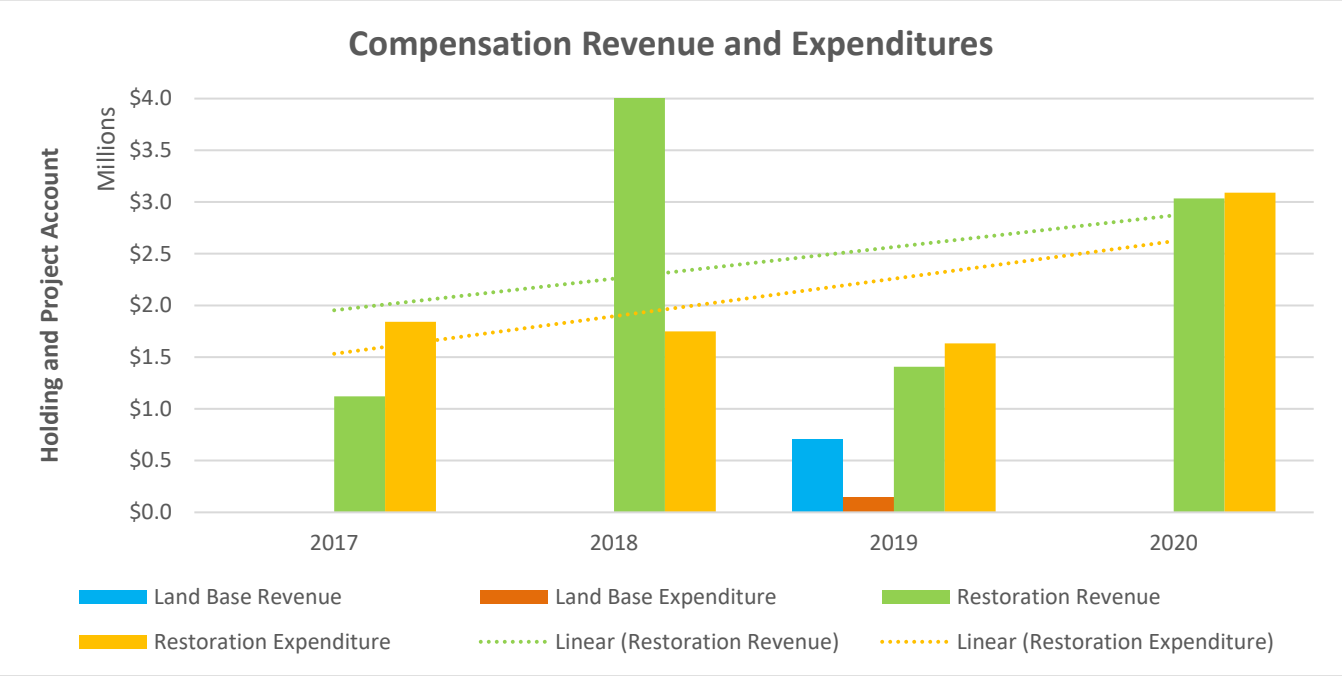

FIGURE 5. COMPENSATION REVENUE AND EXPENDITURES (2017-2020)

The revenue and expense totals presented in Figure 4 may differ from TRCA's audited financial statements at fiscal year-end, as the totals were prepared prior to year-end and represent a subset of the compensation funds.

Goal 1: No Net Loss

The goal of no net loss is fundamental to TRCA's principles of ecosystem compensation, where outcomes aim to fully replace the same level of lost ecosystem structure and function in proximity to where the loss occurs and, where possible, achieve an overall gain. Ecosystem feature and function losses along with their required mitigation and compensation amounts are identified through the plan review process. If TRCA then receives funds as cash-in-lieu, deliverables are tracked and reported through standard project management practices. The Guideline is used to determine the amount of ecosystem compensation that is appropriately grounded in certain science-based assumptions, such as:

- Basal area is a suitable proxy for forest stand biomass and function;
- Restored areas are fully successful given 5 years of post-implementation monitoring and maintenance; and
- With planting ratios applied, a 10-year-old restoration site will be able to provide the same biomass back to the natural heritage system, which will eventually mature into a fully functioning forest.

As this is the second annual report, we have not yet collected enough monitoring data to confirm that these assumptions are borne out by the data. Therefore, this iteration of the annual report defines no net loss as TRCA's ability to restore the required compensation areas with the cash-in-lieu funds received. With this definition of no net loss, the compensation required and the corresponding restoration should be equal. Required compensation areas were compared to restoration project areas (past, present, and future implementation) to assess how close the Ecosystem Compensation Program is to achieving no net loss.

It is important to note several limits on the scope of the information presented. This summary does not include situations where losses occur to the natural heritage system and compensation is not achieved. As a result, not all losses are truly considered in this summary, and losses on the landscape are greater than presented here. Also not included in this assessment are compensation situations where restoration is implemented by other agencies (i.e., through a landowner or a consultant implementing on- or off-site compensation related to a loss). Therefore, the restoration area total may also be under-represented across TRCA's jurisdiction. Lastly, this summary does not attempt to look at compensation files older than 2017, as the same level of loss and restoration information is not readily available. However, there is sufficient information within the Compensation Database records (2017-2020) to assess whether TRCA projects will restore enough area to offset the losses to which compensation is applied during the planning process and received by TRCA as cash-in-lieu.

Table 1a, Terrestrial Natural Feature Restoration Across TRCA's Jurisdiction by Type, compares the required compensation area to the restoration project area for projects where TRCA received cash-in-lieu funds between 2017-2020. The table shows the area of each natural feature type broken down by (1) area required to be restored as applied through the Guideline (including treed ecosystem ratios); (2) natural features restored to date with compensation funds; (3) natural features to be restored with received compensation funds; and (4) the total restored area to be realized once all restoration projects are completed. The final row, Restoration Balance, is the required restoration compared against what will be restored.

TABLE 1A. TERRESTRIAL NATURAL FEATURE RESTORATION ACROSS TRCA JURISDICTION BY TYPE (2017-2020)

Terrestrial Natural Features (ha)	Forest	Wetland	Riparian	Meadow	Total
(1) Restoration Required	60.3	21.0	0.7	12.6	**94.6**
(2) Restoration Completed	12.1	15.0	4.2	0.0	**31.3**
(3) Future Restoration to be Completed (Based on funds in Account)	60.8	14.5	0.5	1.6	**77.3**
(4) Total Restoration Secured ((2) Completed + (3) Future)	72.9	29.5	4.6	1.6	**108.6**
Restoration Balance ((4) Total Restoration – (1) Required)	**12.6**	**8.5**	**3.9**	**-11.1**	**14.0**

Like Table 1a, Table 1b Aquatic Natural Feature Restoration Across TRCA's Jurisdiction by Type, outlines the aquatic compensation currently being planned and demonstrates that if the restoration typical treatment (which standard costings is based on) is applied then the required amount of restoration (linear metres) will not be obtained. Therefore, project selection should favour a site that uses a more refined treatment than the typical treatment in order to maximize the restoration benefit achieved with the existing funds.

TABLE 1B. AQUATIC NATURAL FEATURE RESTORATION ACROSS TRCA JURISDICTION BY TYPE (2017-2020)

Aquatic Natural Features (m)	Stream
(1) Restoration Required	14.7
(2) Restoration Completed	0.0
(3) Future Restoration to be Completed (Based on funds in Account)	7.3
(4) Total Restoration Secured ((2) Completed + (3) Future)	7.1
Restoration Balance ((4) Total Restoration – (1) Required)	**-7.4**

The results of Table 1a show that for this subset of losses where compensation was applied and funds were received as cash in-lieu, there is a projected net gain for terrestrial natural features (14.0 ha). However, when looking at the terrestrial natural feature types individually, we see a net loss projected for meadow habitat (-11.1 ha). This is the result of older agreements (2010s) undervaluing the cost to implement native meadow habitat restoration, a cost that has been refined by TRCA through implementation and research at The Meadoway Project in Toronto. Table 1b shows a net loss for aquatic natural features (-7.4 m), which is due to undervaluing the cost to implement stream restoration.

When TRCA's Restoration and Resource Management group does not have enough funding to undertake what has been requested or required, funds to implement projects will be used in the most efficient way possible to maximize restoration toward a no net loss scenario. In such cases, reaching no net loss may be possible by leveraging additional funds and/or finding efficiencies by reducing project elements such as site preparations, planting numbers, or habitat features. Conversely, efficiencies in project implementation that lead to surplus funds will be reinvested toward further restoration or project enhancements. The Framework directs that surplus funds first go toward offsetting underfunded projects to reach the required restoration targets. For example, restoration surplus following implementation is the reason for the projected 14.0 ha of terrestrial net gain.

In addition to natural feature compensation, the Guideline also addresses replacing lost land base. The planning files that TRCA was involved with in 2020 did not result in new cash-in-lieu being received to compensate for lost land base. This is due to development land base losses being compensated for on-site.

Note that, as stated in the Guideline, regional and municipal infrastructure projects do not necessarily require land base compensation, although the Guideline does suggest that TRCA track losses and work with municipalities to identify opportunities to provide land base back to the natural heritage system through TRCA's Greenland's Acquisition and municipal land securement programs. It should also be noted that the compensation requirements for Metrolinx projects (included in this report) follow the Metrolinx Vegetation Guideline requirements, which are based in part on the TRCA Guideline. Restoration to offset Metrolinx tree removals is also being implemented ahead of removals as a Best Management Practice and as part of the effort to reduce the time lag required for compensation plantings to grow.

Goal 2: Accountability

Assessing the level of accountability through the administration of the Ecosystem Compensation Program is an important measure of governance for two reasons. First, ecosystem compensation is often tied to agreements where specific outcomes are required. Agreements ensure transparent, consistent, and timely compensation. In support of this goal, the Program Review Team developed a compensation agreement template to ensure that principal elements are included in each agreement. Similarly, following the formal agreement execution, invoices are sent to the proponent to provide simple traceability of funds.

Second, in situations where the proponent is not implementing the compensation themselves and funds are received by TRCA as cash-in-lieu, financial accountability ensures that the funds are used as intended. The Compensation Database tracks when and where compensation funds are used and demonstrates that required restoration targets are being met.

The establishment of the Framework in 2019 has increased accountability as the Ecosystem Compensation Program becomes more integrated across departments. Workflow improvements (e.g., timely data entry and notification) in the Compensation Database reduced the administrative burden and increased the availability of information. Funds are tracked against required restoration targets in addition to standard financial project tracking.

The Framework was implemented to guide and track the movement of funds for compensation, improve interdepartmental communications, and standardize reporting on program and project outcomes. As outlined in the Framework, reporting on individual files is completed by the Project Review Team, and annual program reports are prepared by the Program Review Team. This year the Restoration Site Selection Brief report was updated to make roles and responsibilities within the Project Review Team clearer. Thirty briefs were prepared this year and circulated within the Project Review Team for approval prior to starting restoration projects and transferring funds. Program reports, such as this one, help guide the future development of compensation practices at TRCA by reviewing goals, progress, and recommendations for further improvement.

Goal 3: Transparency

Compensation for lost natural features is executed at municipal, provincial, and federal levels through various by-laws, policies, and regulations. TRCA's role in compensation can be as a regulator, advisor, or compensation project implementer, therefore, transparency throughout the compensation process is important to achieve fairness and compliance in the execution of an Ecosystem Compensation Program. Through the Guideline and Framework, mechanisms have been developed to demonstrate transparency, including:

- A clear description of how TRCA determines and executes compensation requirements;
- Restoration Site Selection Briefs that outline the compensation requirements and restoration site selection decisions, and provide details on proposed implementation;
- Project completion reports that summarize project implementation deliverables;
- Post-construction assessment reporting 1, 3, and 5 years after completion, in addition to pre- and post-restoration implementation monitoring;
- Financial tracking; and

- Annual reporting to the TRCA Board of Directors on the overall Ecosystem Compensation Program.

Note that this reporting only covers projects implemented by TRCA. In the future, this type of reporting could be applied to projects implemented by other agencies.

Over the course of 2020, older files were incorporated into the Compensation Database and more Restoration Site Selection Briefs were circulated within the Project Review Team. These efforts contributed to greater transparency across the Ecosystem Compensation Program.

Goal 4: Consistency

The Guideline stresses the need to ensure consistency throughout the compensation process. This applies to determining compensation requirements for lost natural features, calculating the cost of compensation lands, and implementing restoration projects, as well as ensuring that restoration projects meet a high standard. Mechanisms in the Framework facilitate consistency by providing:

- Improved lines of communication between Project Review Team members by clearly defining team member roles and workflows throughout the life of a compensation project;
- Specific targets and ratios to compensate for unavoidable losses to ensure the decisions are clearly understood and can be easily repeated file-by-file;
- A centralized database that all TRCA staff can use to calculate compensation requirements and implementation costs, and track and report on project status;
- Restoration project cost estimates for implementing different cover types (wetland, forest, meadow, etc.) that detail required components to ensure that project design and implementation meet a high standard whether completed by TRCA or external proponents and consultants; and
- Agreement and Reporting templates (e.g., Restoration Site Selection Brief, Compensation Database) that record the same information for each compensation file.

These tools enable as much consistency as possible between individual plan review files and restoration projects. However, it is unreasonable to expect 100% consistency as many different factors affect each file, including the mechanism for compensation: it may be internal and tied to the Conservation Authority (CA) permit, or external and through a Department of Fisheries and Oceans Canada (DFO) or Local Planning Appeal Tribunal (LPAT) process. In all cases TRCA strives for consistency.

Table 2, Funds Received and Consistency with TRCA Guideline, presents cash-in-lieu funds received by TRCA compared with funds requested in 2017-2020. This table shows that, over the last four years, TRCA successfully negotiated full cost recovery for restoration projects 96% of the time. Discrepancies are due to funds being reduced during negotiations with proponents and other agencies. These cases usually involve infrastructure and external regulatory agencies such as DFO.

TABLE 2. FUNDS RECEIVED AND CONSISTENCY WITH TRCA GUIDELINE

Funding (2017-2020)	Consistency %
Equal to Requested	96%
Less than Requested	4%
Total	**100%**

Before the Guideline was developed, there was less emphasis on keeping restoration within a municipality or watershed where the compensation project occurred; under the Guideline, adherence to this principle has become more consistent. Of the funds received between 2017 and 2020, 93% of restoration projects were undertaken in the same municipality and 87% were in the same watershed. When looking at funds received in 2020 alone, 100% of restoration projects were implemented in the same municipality, and 83% were in the same watershed. Tables 3a and 3b compare where compensation projects occurred and restoration projects occurred. Sometimes the restoration site selection rationale suggests a location outside the impacted municipality or watershed; this is a decision agreed upon by the Project Review Team in consultation with the affected municipalities. For example, in 2017-2020 there were six restoration projects funded by compensation projects in Toronto: four of the restoration projects were implemented within Toronto; compensation funds from the Toronto Waterfront were reallocated (as agreed by TRCA, Toronto, and DFO) to a Waterfront restoration projects in Ajax; and one final impact in Toronto was allocated to a restoration project within the same watershed just north of the Toronto-Vaughan border.

TABLE 3A. COMPARISON OF COMPENSATION FUNDING SOURCES AND EXPENDITURES BY MUNICIPALITY (2017-2020)

Municipality Where Restoration Occurred	**Municipality Where Compensation Project Occurred**								**# of Restoration Projects**
	Ajax	**Brampton**	**Caledon**	**Markham**	**Pickering**	**Richmond Hill**	**Toronto**	**Vaughan**	
Ajax	3				2		1		**6**
Brampton		4							**4**
Caledon			5						**5**
Markham				3					**3**
Pickering					25				**25**
Richmond Hill						2			**2**
Toronto							5		**5**
Vaughan							1	3	**4**
# of Restoration Projects	**3**	**4**	**5**	**3**	**27**	**2**	7	**3**	**54**

TABLE 3B. COMPARISON OF COMPENSATION FUNDING SOURCES AND EXPENDITURES BY WATERSHED (2017-2020)

Watershed Where Restoration Occurred	Watershed Where Compensation Project Occurred								# of Restoration Projects
	Don	Duffins	Etobicoke	Humber	Mimico	Petticoat	Rouge	Waterfront	
Don	1								**1**
Duffins		27						1	**28**
Etobicoke			1					1	**2**
Frenchman's Bay		1							**1**
Highland	1								**1**
Humber				10			1		**11**
Mimico				1	1				**2**
Petticoat						2			**2**
Rouge							4	1	**5**
Waterfront								1	**1**
# of Restoration Projects	**2**	**28**	**1**	**11**	**1**	**2**	**5**	**4**	**54**

Tables 4a and 4b provide additional information on the proximity of restoration compensation sites to losses across the jurisdiction. The average distance between an impact and restoration site within various municipalities between 1994-2020 was 3.7 km, and the maximum distance of 30.4 km resulted from a Toronto impact along the waterfront where restoration occurred elsewhere along the waterfront. When looking at the distance from impact to restoration within the watershed, the average distance is 4.4 km, and the maximum distance is that same 30.4 km. Comparing these numbers against future reporting will help to assess TRCA's ability to find restoration compensation sites near impacted areas. When pre-2017 information was entered into the Compensation Database, the average distances between impacts and restoration increased from the 2.61 km reported last year, which is another indication that sites selected in previous years were typically farther apart.

TABLE 4A. RESTORATION PROJECT DISTANCE FROM COMPENSATION IMPACT BY MUNICIPALITY 1994-2020

Municipality	Average Distance (km)	Maximum Distance (km)
Ajax	1.5	3.1
Brampton	1.8	11.1
Caledon	3.5	11.1
Markham	6.2	9.3
Mississauga	0.2	0.3
Pickering	1.6	5.2
Richmond Hill	4.7	5.2
Toronto	12.1	30.4
Vaughan	1.5	6.0
Overall	**3.7**	**30.4**

TABLE 4B. RESTORATION PROJECT DISTANCE FROM COMPENSATION IMPACT BY WATERSHED 1994-2020

Watershed	Average Distance (km)	Maximum Distance (km)
Carruthers	3.7	5.2
Don	3.0	9.6
Duffins	1.1	3.2
Etobicoke	3.0	11.1
Frenchman's Bay	3.6	4.6
Highland	1.8	4.7
Humber	2.2	11.1
Mimico	2.7	5.0
Petticoat	0.5	0.9
Rouge	5.2	9.3
Waterfront	21.5	30.4
Overall	**4.4**	**30.4**

Goal 5: Efficiency and Timeliness

The Guideline directs that restoration should be achieved in a timely manner. This minimizes the time lag between the lost ecosystem functions and those that are provided by restoration implementation.

Targets for time lag goals were set in the 2019 program summary report.

- Time from receipt of cash-in-lieu funds to starting or initiating projects to be within 1 year;
- Time from receipt of cash-in-lieu funds to project implementation to be within 2 years; and
- Time from receipt of cash-in-lieu funds to project completion to be within 7 years.

The tables below (Tables 5-7) indicate that TRCA has met these goals for 2017-2020, with a few exceptions. Negative numbers in the time lag column indicate that restoration (planning and/or implementation) began prior to receiving funds. This is common when projects are invoiced after implementation as per agreement. This also occurred in 2020 when TRCA allocated the ecosystem bank at the Toronto Islands to help offset impacts within Toronto related to the Ashbridge's Bay Landform Project. Time lags for years 4 onward represent estimates of future activities beyond 2020 and may be adjusted as restoration project implementation progresses.

TABLE 5. TIME INTERVAL BETWEEN RECEIVING FUNDS AND STARTING RESTORATION PROJECT

Time Lag (Years)	# of Projects	% of Projects
-10*	1	3%
-2	6	15%
-1	10	26%
0	17	44%
1	5	13%
Grand Total	**39**	**100%**

100%

* Negative time lag represents past activity where restoration completed before funds received.

TABLE 6. TIME INTERVAL BETWEEN RECEIVING FUNDS AND RESTORATION PROJECT BEING IMPLEMENTED

Time Lag (Years)	# of Projects	% of Projects
0	8	31%
1	12	46%
2	5	19%
3	1	4%
Grand Total	**26**	**100%**

96%

TABLE 7. TIME INTERVAL BETWEEN RECEIVING FUNDS AND COMPENSATION PROJECT FILE COMPLETION

Time Lag (Years)	# of Projects	% of Projects
0	3	12%
1	7	27%
2	1	4%
5**	3	12%
6**	6	23%
7**	4	15%
8**	1	4%
14***	1	4%
Grand Total	**26**	**100%**

92%

** Greater than 4-year time lag represents estimate of future activities beyond 2017-2020.

***10 years of monitoring and maintenance associated with Meadow restoration.

Goal 6: Adaptability

Undertaking an adaptable management strategy for compensation is important on a project and program basis. At the project level, being adaptable is important as there are often multiple stakeholders working toward complex solutions and no two projects are alike. As a result, it can be challenging to have a consistent one-solution approach to compensation. Adaptability is particularly important in urban restoration projects where there are multiple constraints that add uncertainty and threaten the projects' viability and longevity (e.g., invasive species, soil compaction, urban storm runoff, etc.). Post-implementation assessments and monitoring are essential to understand the trajectory of a restoration project and to adapt maintenance to ensure that the target ecosystem functions are maximized.

At the program level, adaptation relates to understanding gaps, deficiencies, or inconsistencies in how compensation decisions are tracked and executed and making changes to ensure regulatory requirements are met in the best possible manner. Adaptation ensures that we integrate the lessons learned from working with the Guideline and Framework, so that the program can grow, become more robust and defensible, and achieve its goals. In 2020 TRCA worked to understand the gaps in existing systems. Restoration and Resource Management continues to work with the Finance and Information Technology & Records Management (ITRM) business units to further refine the Compensation Database, including the information it can store and report, and its connections to other internal databases. Mechanisms in the Guideline and the Framework that relate to adaptation include:

- Annual summary reporting of the Ecosystem Compensation Program using metrics to assess performance and provide recommendations for adaptation where necessary;
- Improved lines of communication to ensure decisions are reviewed and commented on by the appropriate staff on the Project Review Team in a timely manner; and
- Post-construction assessments, monitoring, and maintenance to maximize project performance and minimize lag time between ecosystem functions lost through natural feature removal and those recovered through restoration.

DISCUSSION AND RECOMMENDATIONS

Based on the information presented above, the following sections outline key points with recommendations for the Ecosystem Compensation Program.

Goal 1: No Net Loss

Currently, compensation implementation specific only to TRCA projects is achieving an overall net gain of natural feature area. However, this must be viewed cautiously since the results in this summary relate only to compensation projects where TRCA has received cash-in-lieu funding. As stated in the Details section above, situations where losses occur that do not result in compensation are not reflected in this assessment. As previously noted, on-site restoration and compensation implemented by other agencies are also not included in this assessment. Although this summary does not reflect the complete picture of compensation, it does provide an understanding around TRCA best practices (i.e., is TRCA effectively implementing enough off-site compensation projects to match the required losses where compensation is applied?).

The net gain identified in the results was achieved through project efficiencies. In other words, funds remaining once restoration requirements were met were used to provide value-added restoration (i.e., more natural features) to existing projects. As noted earlier, there is currently an 11.1 ha deficit in meadow habitat and a 7.4 m deficit in stream habitat resulting from undervaluing the cost of restoration. To address the continued restoration requirement for meadow and stream habitat, TRCA will continue to implement restoration projects in an efficient manner and look for opportunities where surplus compensation funds can be leveraged with new funds to meet the required compensation targets.

To better track restoration gains, TRCA will investigate methods of incorporating other business units currently implementing projects (including Forestry, Engineering Projects, Project Management Services, and Property and Risk Management) into the Compensation Databases so that all project activities implemented with compensation funds can be tracked accordingly.

Tracking internal impacts and compensation would also add additional information to the ecosystem net balance equations. TRCA projects are typically self-compensating, but to be consistent with the Framework, it is recommended that a standard method of tracking internal project impacts and compensation be included in the Compensation Database.

To capture the larger scope of losses and gains, the Compensation Database should be updated with losses that do not result in cash-in-lieu being received by TRCA. This would include scenarios where natural feature losses occur and funds are directed to an external municipal partner or consultant, or where no restoration results are expected/achieved. Additionally, Compensation Database updates could include scenarios where land base losses occur and on-site compensation is not enough to meet the loss, therefore losses are satisfied by transferring lands to a municipal partner or TRCA or funds are directed to a municipal partner. There are opportunities for integration with a new Infrastructure Planning and Development database called PARES (Planning Application Review and Enforcement System) that could assist with tracking losses in the future. Collaboration between TRCA departments will continue towards more integration of data to improve communication and reporting.

Goal 2: Accountability

Improved tracking and reporting through the Compensation Database have enabled greater accountability through more robust data summaries and improved lines of communication. In 2020 the Compensation Database User Manual was also updated to reflect the many changes to the database since 2017. The data show that the amount of funds TRCA receives from compensation continues to grow every year (Figure 4). This is also true of the funds spent to implement restoration projects. When comparing received funds with expenditures, the data show that despite TRCA's ability to implement more projects over the years, further increases in available resources (staff, materials, equipment, contractors) will also be needed to keep up with greater cash-in-lieu funds being received. Restoration and Resource Management will look to increase staff support in 2021 to assist with project implementation and program management. This will ensure that restoration projects are implemented in a timely manner and that the lag time between feature loss and restoration implementation is minimized.

Goal 3: Transparency

The Ecosystem Compensation Program has become even more transparent since the adoption of the Guideline and the implementation of the Framework. As the program develops, it will be important to determine if these mechanisms continue to demonstrate open and transparent lines of communication externally and internally. For

example, are we responding quickly enough to requests for information? Are we providing enough information to inform agencies and proponents about the allocation of compensation funds? Is there a clear understanding from proponents and agencies about what TRCA is doing with cash-in-lieu funds received? TRCA staff continue to make improvements in this area. Examples of this improved transparency are revisions to Restoration Site Selection Briefs to provide more detail on projects; revisions to the compensation agreements (currently under legal review) to reflect adherence to the Guideline; and collaborative meetings with municipalities and other stakeholders to ensure clear communication of TRCA's Ecosystem Compensation Program. Given its importance, transparency will continue to be assessed in future summary reports.

Goal 4: Consistency

TRCA strives to achieve restoration within the same municipality where the impact originated. Table 3a shows that although there are exceptions to this rule, as agreed upon by the Project Review Team and the municipality, TRCA successfully accomplishes this in most cases. When selecting a site for restoration, funds are directed primarily within the municipality first and within the watershed second. In some cases, for larger or more complicated projects, it may be necessary to obtain direction from the Program Review Team as well.

Since the adoption of the Guideline and the Framework, consistency of data input to the Compensation Database has increased significantly, allowing for more useful information to be retrieved. Additionally, a more consistent approach to roles, responsibilities, and workflow has improved interdepartmental communication and overall understanding of policies and procedures related to compensation practices. Although each file is different and negotiations could alter the eventual outcome, staff should continue to strive for consistency when applying the Guideline principles.

Goal 5: Efficiency and Timeliness

The 2019 annual report on the Ecosystem Compensation Program set targets for efficiency and timeliness which TRCA will continue to strive for. The targets set last year are referenced below and were developed by looking at the then current time lags for the full set of restoration projects. The 2020 assessment (2017-2020) shows that TRCA achieved the follow percentages:

- 100% of projects were started or initiated within 1 year of receipt of funds; this is up from 69% when reported in 2019;
- 96% of projects were done active implementation within 2 years of receipt of funds; this is up from 49% when reported in 2019; and
- 93% of projects were completed and funds fully spent (including monitoring and maintenance) within 7 years of receipt of funds; this is up from 70% when reported in 2019.

These targets will be used in subsequent summary reports to measure ongoing performance and to highlight recommendations for future adaptation strategies. One recommendation for future action is to increase the availability of the resources needed to implement more compensation projects each year. These resources include staff, machinery, equipment, and contractors. In 2021, Restoration and Resource Management will seek to hire a new staff to assist with restoration projects that result from compensation projects. It is important to note that meadow restoration has a longer monitoring and maintenance phase and will not conform to the third goal for having funds

spent in 7 years. Some projects may also get stalled due to delays in securing restoration project permitting and partner agreements. Sometimes this is beyond the control of the project manager, however, new efficiencies may be found by improving communication with regulatory agencies and stakeholders (e.g., yearly restoration project screening meetings with regulatory bodies).

Goal 6: Adaptability

Compensation implementation is complicated and can vary from file to file, so it can be a challenge to achieve a consistent approach with each proponent and/or regulatory agency. The Ecosystem Compensation Program needs to be adaptable to account for the complexities of each file and to ensure that the overall Ecosystem Compensation Program can adapt when significant changes are required. These instances may include but are not limited to the following:

- New scientific understanding as it applies to ecosystem function and the impacts of natural feature losses;
- Identifying specific deficiencies in the Ecosystem Compensation Program and taking actions for improvement;
- Collaboration and data sharing with other regulatory agencies that inform process change needs;
- Feedback from proponents and municipalities that can inform process and communication improvements;
- Undertaking comparative analysis of other jurisdictions' approaches to compensation to inform best practices and program changes; and
- Monitoring results that identify a need to change restoration practices.

The factors above have been critical to the development of the Guideline and the Framework, and there has been significant adaptation in the past few years to improve the Ecosystem Compensation Program. TRCA will continue to assess performance, share information, acquire stakeholder feedback, and use updated science to adapt and minimize program deficiencies.

Major adaptations that occurred during 2020 included:

- Refinements to the financial process and flow of information;
- Development of a standard compensation agreement template;
- Collaboration and adjustment of year-end account procedures;
- Data reporting alignment with existing reporting structures; and
- Adjustments to staff roles and responsibilities regarding communication between departments and data entry into the Compensation Database.

Future adaptations will be outlined, assessed, and reported on in subsequent compensation summary reporting.

NEXT STEPS

The items outlined here will direct the focus for Program improvements over the course of 2021.

No Net Loss: To make sure that the restoration required to compensate for losses is held to a high standard, the restoration costs for typical habitat types have been updated to include the new 2020 full cost staff rates for fee for service works, as well as increases to construction costs, and recommended adaptations to design and implementation practices based on monitoring results and scientific research. A longer-term review of the Ecosystem Compensation Program will be needed to assess effectiveness of the no net loss principles as described in the Guideline. To help assess the net balance of compensation decisions, Compensation Database updates and integration across Divisions will be investigated. In addition, TRCA will work to standardize how internal projects (those that result in an impact and associated compensation) get tracked in the Compensation Database.

Accountability: Staff will continue to improve the Compensation Database to ensure it captures information required for file review and reporting. It is important that the information is easily accessible to both the Project and Program Review Teams, as the annual Ecosystem Compensation Program summary report will depend on accurate outputs from the Compensation Database. To aid staff in data entry, a Compensation Database User Manual was produced in 2020 and subsequent training will occur throughout various TRCA divisions.

Transparency: Transparency will continue to be improved in 2021 as old (pre-2017) information on losses and restoration are uploaded into the Compensation Database. This will allow for more fulsome reporting on compensation projects covering a longer period and ensure that all compensation funds are being addressed in a timely manner.

Consistency: The Program Review Team will continue to meet and discuss items that require clarity or adaptation so that TRCA staff continue to implement compensation uniformly. Discussions will be held with other levels of government, including our municipal partners and other conservation authorities, to help ensure that compensation across southern Ontario is undertaken in a consistent manner while recognizing regional differences in development patterns and landscapes.

Efficiency and Timeliness: With both the Guideline and the Framework in place, and with program reporting underway, it is necessary to ensure that restoration keeps pace with losses on the landscape by reducing the administration time lag associated with establishing new natural features and then allowing them to mature. 2020 has seen streamlining and improved understanding of the Guideline and Framework processes. In 2021 the plan to increase resources in TRCA's Restoration and Resource Management business units will improve capacity, reduce timelines (outside of external permit and approval delays, such as those required to implement restoration projects), and help to draw down funds currently allocated for restoration.

Compensation Database updates to automate summary report generation in 2021 will also improve the efficiency and timeliness of the Program reporting next year. Increased access to ITRM resources will be required to support this.

Adaptability: The Ecosystem Compensation Program will continue to be refined to meet the Framework goals and objectives. There are three principal areas that will continue to be investigated and addressed. First is the concept developed in the Guideline of applying basal area as a simple proxy for natural feature functions; this will be reviewed with external professionals to determine if the concept can be stronger. Second will be improvements to tracking land base losses that occur without compensation to represent natural heritage system losses more accurately. Land base loss tracking improvements will be sought for losses that result from Environmental Assessments, regional and municipal projects, as well as on-site compensation, so that losses and gains can be tracked more effectively and compared to local Greenland Acquisition and Securement Strategies, thereby capturing the net natural feature balance across TRCA's jurisdiction. Finally, incorporating property and asset management costs for lands dedicated to

TRCA as part of a compensation project will be explored to ensure that TRCA is able to sustainably maintain those lands for the future.

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