



2021 Ecosystem Compensation Program Summary Report

Prepared by TRCA Ecosystem Compensation Program Review Team

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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 program governance, was finalized in June 2019, and recently updated in October 2021 to address housekeeping items like division name changes and financial workflow. The Ecosystem Compensation Management Framework recommends regular reporting to identify how well TRCA is meeting its goals and performance metrics.

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 (natural feature and land base) 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.

For compensation projects initiated between 2018 and 2021, TRCA has completed 37%, an additional 21% have restoration in active planning or implementation phases, and the remaining 42% are currently in negotiations.

Since 2017, TRCA has received \$11,789,000 in compensation funds for natural feature restoration (\$10,841,000) and land acquisition (\$948,000) of which \$10,814,000 is projected to be spent by the end of 2021, including \$638,700 used to acquire lands. Remaining funds received to date are allocated to specific projects for planning, implementation, monitoring, maintenance, and future lands acquisitions. Of the natural feature restoration projects, 98% were implemented in the same municipality as the impact and 92% were implemented in the same watershed. In 2021, TRCA received \$2,608,000 as cash-in-lieu from 16 compensation projects, including \$94,000 for land base compensation and will be using \$3,777,000 from compensation funds received to date, which includes from previous years, to implement 109 restoration projects from planning through to monitoring and maintenance, including \$495,000 to acquire one new property. Of the restoration projects implemented in 2021, 100% were in the same municipality as the impact and 92% were in the same watershed.

This report shows that for the losses where compensation was applied and funds were received as cash-in-lieu (2018-2021), there is a projected net gain for terrestrial (22.7 hectares) and aquatic features (145.3 metres). This is primarily the result of reinvesting surplus funds. A net gain is also achieved for land base between 2020 and 2021 where compensation funds were applied to two parcels to compensate for the 0.7 hectare natural heritage land base loss which occurred between 2018 and 2021. Compensation funds were leveraged to secure a total of 62.6 ha of new land in TRCA ownership, of which 35.5 ha will be restored and added into the natural heritage system. In 2021 there were 16 compensation projects, 15 of which were related to infrastructure development and therefore did not receive any land base compensation. Since not all losses are considered in this summary, losses on the landscape are greater than presented.

TRCA has reasonably met the restoration implementation timelines established in the 2019 summary report. With this report TRCA demonstrates that the program successfully manages compensation received, resulting in increasingly positive outcomes. This report identifies several recommendations that will refine and improve the way the Ecosystem Compensation Program functions, including improvements to costing through the investigation of a minimum cost per hectare to assist with negotiations, improvements to tracking land base

losses, and discussions on developing a playbook to direct staff on how to track compensation triggered by TRCA led projects.

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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) (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, developed in 2019, and recently updated (Oct 2021) (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:

- Municipal planning process
- Environmental assessment process
- Municipal tree/forest/natural feature by-laws implementation
- Local Planning Appeal Tribunal 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
- Other processes (e.g., National Energy Board decisions)

The Framework highlights the use of 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 (natural feature and land base); 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 the 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.

Recent updates to the Framework focused on housekeeping items such as updating roles and responsibilities with new division and position titles, as well as refinements to the financial workflow to capture year-end accounting practices.

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 annually and will highlight the Compensation Program's support of the following TRCA Strategic Plan 2013-2022 objectives.

- 2 – Manage Our Regional Water Resources for Current and Future Generations
- 3 – Rethink Greenspace to Maximize its Value
- 4 – Create Complete Communities that Integrate Nature and the Built Environment
- 9 – Measure Performance

In certain cases, such as high-profile projects, staff may report on compensation elements of projects separately, such projects will still be included in the annual reporting. In 2021 TRCA reported on Metrolinx Compensation Projects where TRCA received funding to undertake restoration in accordance with the Metrolinx Vegetation Guideline (2020) which closely adheres to TRCA's own Guideline. The report was received by TRCA's Executive Committee on November 5th (RES.#B110/21) and provided for the information of the Board of Directors on November 19th (RES.#A243/21).

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.
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.

PERFORMANCE UPDATE

2021 Ecosystem Compensation Program Summary

The information in this summary report was taken from TRCA's Compensation Database. The Compensation Database contains information collected and maintained by the Project Review Teams.

Figure 1, Compensation Projects Across TRCA Jurisdiction, maps the location of impacts or feature losses and compensation restoration projects across the jurisdiction from 1994 to 2021. These impact sites are symbolized by circles of assorted colours indicating their compensation status (in negotiations, or various stages restoration, and completion). The restoration sites are symbolized as orange dots and are linked with a line to the associated impact sites. This map only focuses on where restoration has occurred and does not include areas where land base has been lost and acquired.

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:

- Local watershed plans
- TRCA's Restoration Projects and Opportunities Prioritization (ROP) databases
- TRCA's Integrated Restoration Prioritization (IRP) tool
- Coordination of leveraged opportunities with partners
- Availability of appropriate sites for restoration
- Implementation timelines

Older projects that started prior to the Guideline and Framework may be more likely to be farther from the impact site or cross boundary lines between municipalities or watersheds.

Figure 2 shows the location of the 16 impacts where cash-in-lieu funds were received this year. Mapping also shows the associated restoration project locations and phase of work. This year saw 50 restoration projects beginning and/or finishing implementation and 59 restoration projects in other phases of completion from planning to monitoring and maintenance.

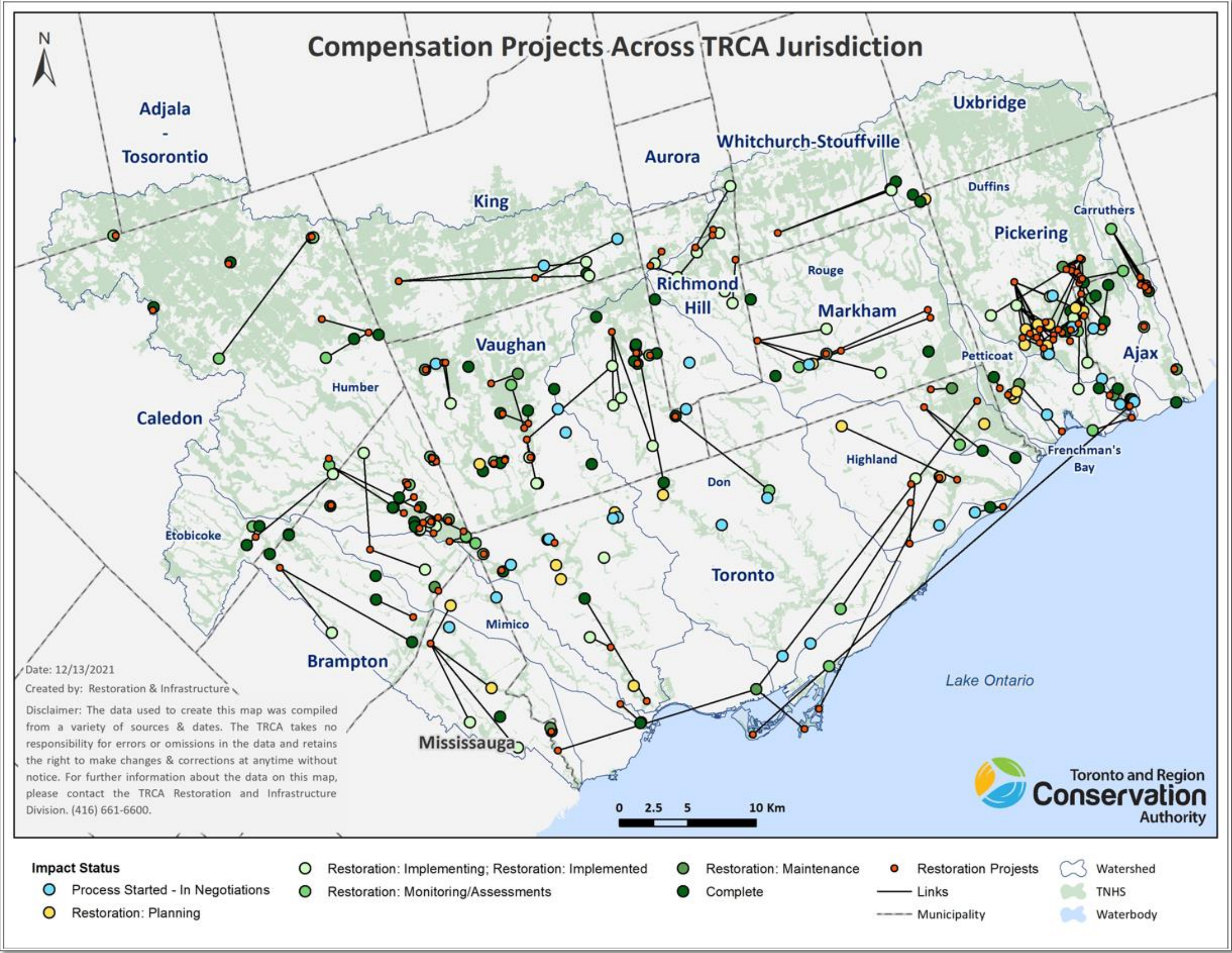


FIGURE 1. LOCATION AND CURRENT STATUS OF COMPENSATION PROJECTS 1994-2021

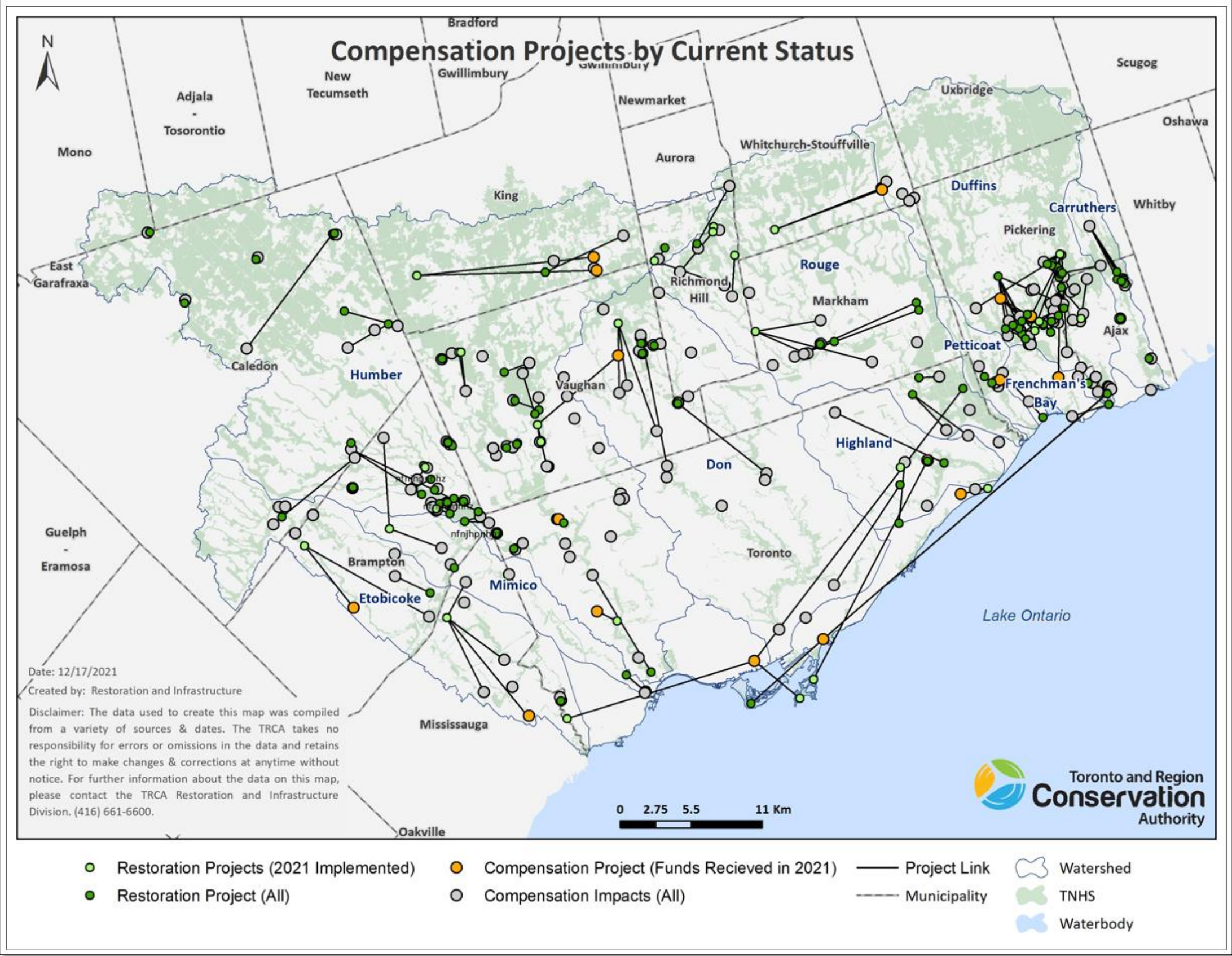


FIGURE 2. 2021 COMPENSATION PROJECTS THAT RECEIVED CASH-IN-LIEU ACROSS TRCA JURISDICTION

Figures 3 and 4, highlight compensation projects initiated between 2018 and 2021 by their current file status, and illustrate where projects are in the compensation process. Note: the colour coding in Figure 1 corresponds to the colour coding in Figures 3, 4, and 5. Currently, 21 compensation projects initiated between 2018 and 2021 are actively being planned for restoration or are in a restoration implementing phase (orange colours), 36 have concluded implementation (green colours), and the remaining 41 are in negotiations (blue colour).

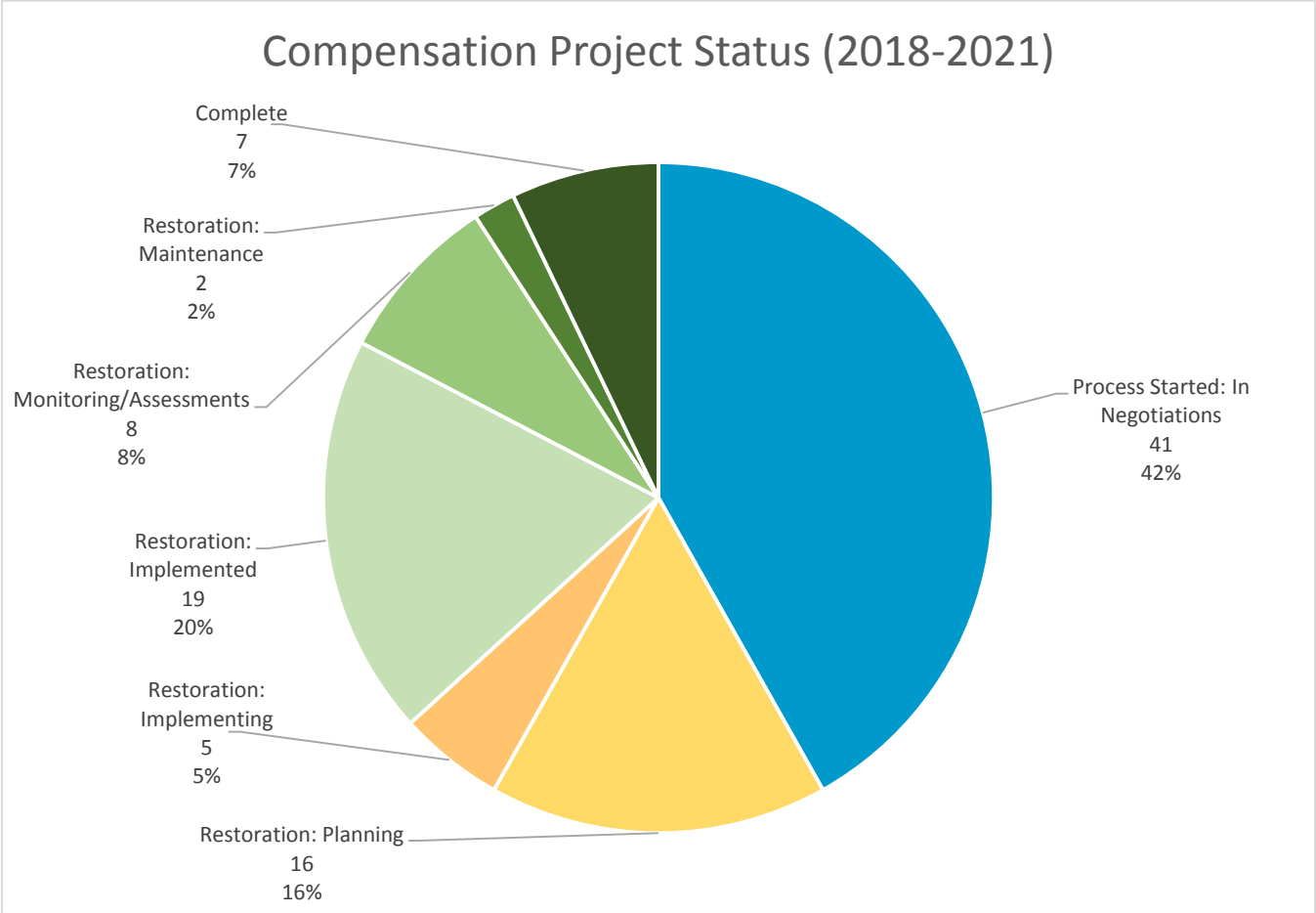


FIGURE 3. COMPENSATION PROJECTS (2018-2021) BY STATUS

Figure 4 provides a further break down of this information so that it can be viewed as the status on compensation projects based on the year the compensation project was realized. The progression of the compensation projects can be seen on this bar graph. An example of this progression is that there are fewer compensation projects which began in 2018 that are still in negotiations, whereas 21 of the 27 compensation projects initiated this year are still in negotiations. Similarly, Figure 4 illustrates that as compensation projects progress from negotiations to restoration planning, and into implementation, more projects are in restoration over time.

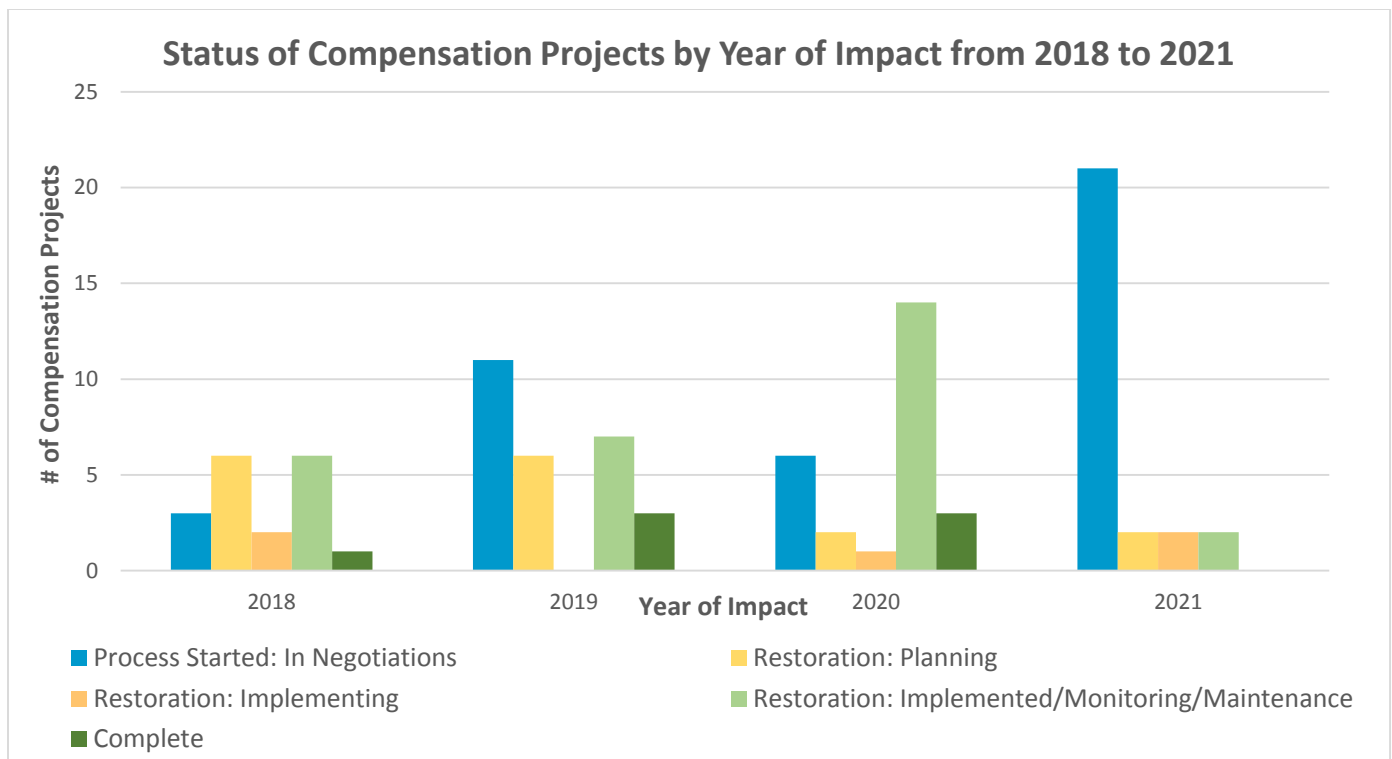


FIGURE 4. COMPENSATION PROJECTS (2018-2021) BY IMPACT YEAR AND STATUS

In 2021 most compensation projects initiated are still in the planning process and are shown in negotiation (21). The remaining compensation projects resulted in TRCA receiving cash-in-lieu in the same year the compensation project was initiated. Of the six projects, two are now in a restoration planning phase, two began implementation, and the remaining two began and completed restoration activities.

Looking at Figure 5 from the perspective of all restoration projects undertaken this year with compensation funds received to date, there are 109 projects in some phase of restoration, 25 in planning, 50 in active implementation or completion, and 34 in a monitoring and maintenance phase. Of the 50 projects in active restoration in 2021, TRCA allocated \$2,987,000 and produced:

- 18.4 ha of terrestrial habitat
- 2,183 linear metres of aquatic/riparian habitat
- 7.9 ha of invasive species management
- 151 nest boxes and structural habitat installations
- 56,989 woody stems planted
- 1500 bioengineering stakes
- 127 kg of native seed
- 6400 m of deer fence

Status of Restoration Projects Using Compensation Funds in 2021

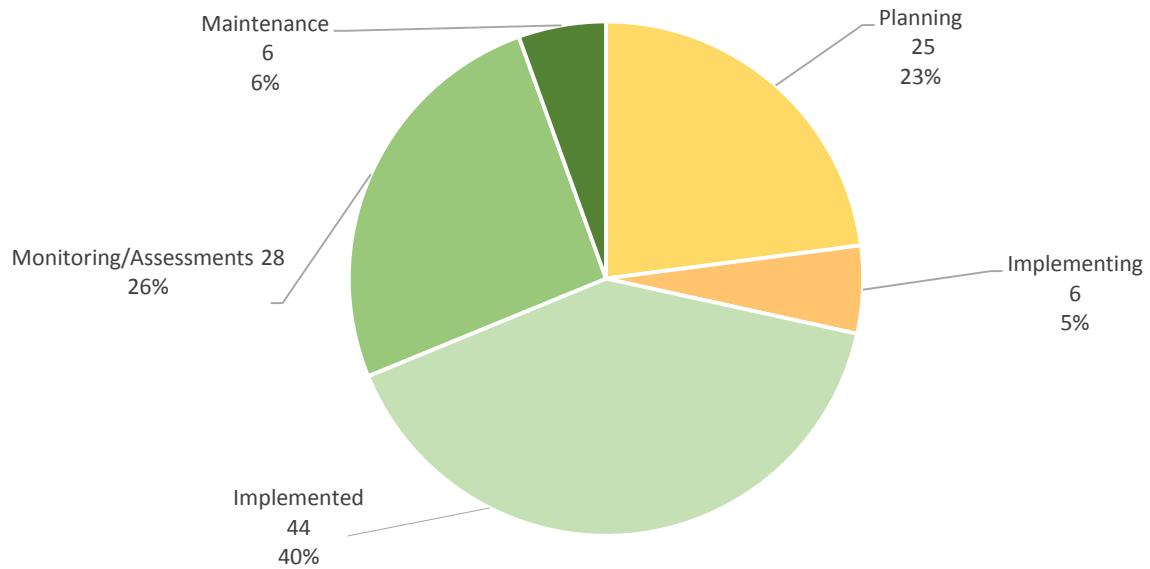


FIGURE 5. 2021 RESTORATION PROJECT STATUS

Figure 6 Compensation Revenue and Expenditures (2017-2021) shows compensation funds received or proposed to be received by December 31, 2021 by TRCA as cash-in-lieu and proposed expenditures to implement restoration projects. Since 2017, TRCA has received \$11,789,000 in compensation funds for natural feature restoration (\$10,841,000) and land acquisitions (\$948,000) and predicts expenditures of \$10,814,000 by the end of 2021, while any unspent funds are allocated to specific projects to be used for future planning, implementation, monitoring, and maintenance. In 2021, TRCA received \$2,514,000 in natural feature compensation and \$94,000 in land base compensation and will be using \$3,282,000 for restoration and \$495,000 for land acquisitions from funds received this year and previously.

Figure 6 demonstrates that funds received by TRCA as cash-in-lieu as well as restoration expenditures are increasing over time, even if somewhat below 2018 levels for funds received. 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 as cash-in-lieu is higher in some years than others, and not easy to predict for upcoming years since each file is unique.

The revenue and expense totals presented in Figure 6 may differ from TRCA’s audited financial statements at fiscal year-end, as the totals were prepared prior to year-end.

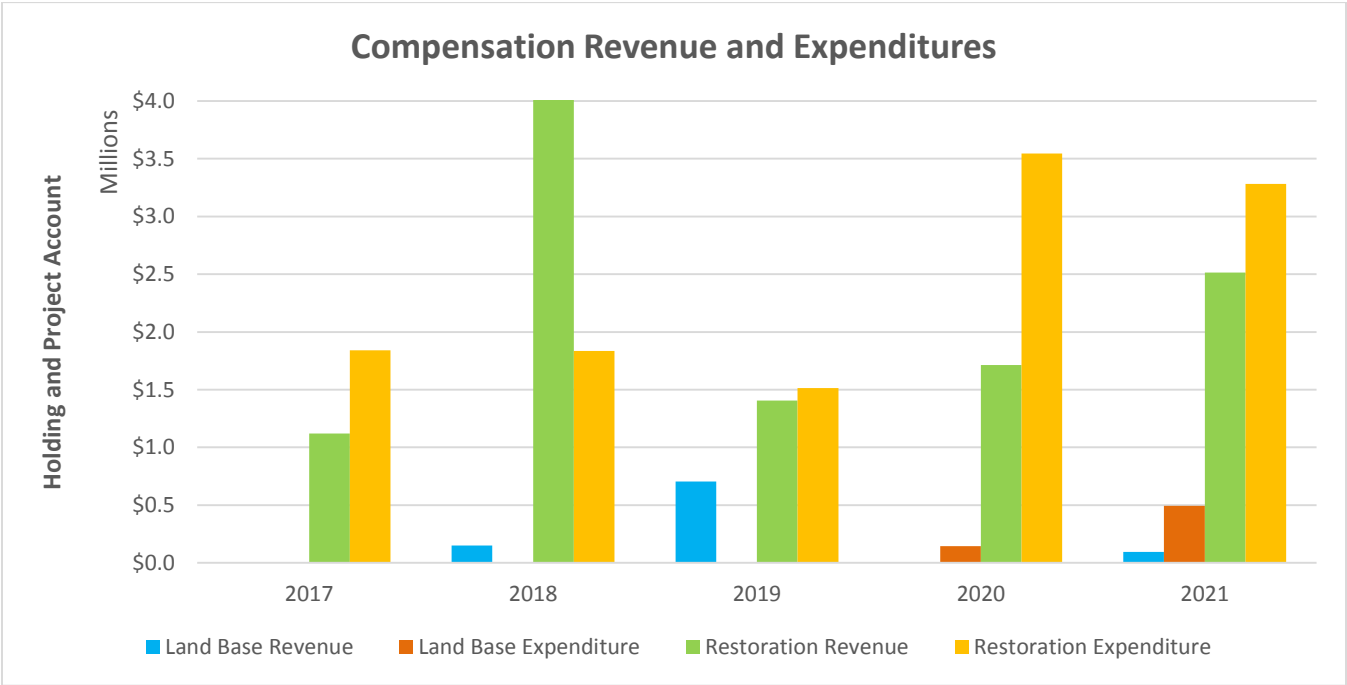


FIGURE 6. COMPENSATION REVENUE AND EXPENDITURES (2017-2021)

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 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 and as such it is important to ensure that the guidance 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.
- 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.

In 2021 TRCA undertook an external professional forester review of our basal area and ratio concept. The result of the review is that TRCA has reaffirmed that basal area is a suitable proxy for biomass and function. Recommendations were also put forward which TRCA will investigate to improve the application of basal area in the compensation context. This year also saw an internal review of TRCA restoration sites to reassess if 10-year-old restoration sites can reasonably be expected to achieve a basal area of 5 m²/ha. The results of this internal review have confirmed that this target is still applicable to the restoration style projects that TRCA implements as outlined in the restoration typicals in Appendix A of the Guideline.

TRCA has also made substantial progress in developing an ESRI Dashboard to combine and display restoration site monitoring results and will continue to work with Information Technology & Records Management (ITRM) to finalize this tool in 2022. When finalized, the Dashboard will allow project managers to easily view project assessment scores and notes and quickly identify corrective actions if a project is shown to be off the target trajectory.

Considering the above, the annual report will continue to review no net loss as TRCA's ability to restore the required compensation areas with 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) and lands acquired 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 and compensation is not achieved through the planning process, as is often the case with land base losses as the result of infrastructure projects. As a result, not all losses are considered in this summary, and losses on the landscape are greater than presented. 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 greater across TRCA's jurisdiction. Where individual tree losses occurred, they have been assumed to cover 25m² so that this loss can be compared to the restoration area. Compensation that was received for losses related to Species At Risk (SAR) or water balance offsets have not been included in the summary of losses and restoration as they do not related to natural feature removals.

Table 1a, Terrestrial Natural Feature Restoration Across TRCA's Jurisdiction by Type, compares the required compensation area to the restoration project area for compensation projects where TRCA received cash-in-lieu funds between 2018 and 2021. The table shows the area of each natural feature type broken down by:

- Area required to be restored as applied through the Guideline (including treed ecosystem ratios)
- Natural features restored to date with compensation funds, including 2021 restoration areas
- Natural features to be restored with received compensation funds (measured against the new 2021 typical costs to implement), including compensation surplus funds
- Total restored area to be realized once all restoration is completed
- Restoration Balance, which calculates the surplus or deficit of nature feature area in hectares

TABLE 1A. TERRESTRIAL NATURAL FEATURE RESTORATION ACROSS TRCA'S JURISDICTION BY TYPE (FUNDS RECEIVED 2018-2021)

Terrestrial Natural Features (ha)	Forest	Wetland	Riparian	Meadow	Total
Restoration Required	21.8	20.5	0.6	12.6	55.6
Restoration Completed with Project funds	30.0	17.3	6.2	5.4	58.8
Restoration Completed with Surplus funds	0.0	0.3	0.0	0.0	0.3
Future Restoration to be Completed with Project funds (Based on funds in Account)	5.0	2.7	0.0	0.1	7.8
Future Restoration to be Completed with Surplus funds (Based on funds in Account)	0.0	11.4	0.0	0.0	11.4
Total Restoration Secured with Project funds Completed + Future	34.9	19.9	6.2	5.5	66.6
Total Restoration Secured with Surplus funds Completed + Future	0.0	11.7	0.0	0.0	11.7
Restoration Balance with Project funds Total Restoration – Required	13.1	-0.6	5.6	-7.1	11.0
Restoration Balance with Surplus funds Total Restoration – Required	0.0	11.7	0.0	0.0	11.7
Grand Total	13.1	11.1	5.6	-7.1	22.7

Like Table 1a, Table 1b Aquatic Natural Feature Restoration Across TRCA's Jurisdiction by Type, outlines the aquatic compensation currently being implemented.

TABLE 1B. AQUATIC NATURAL FEATURE RESTORATION ACROSS TRCA'S JURISDICTION BY TYPE (FUNDS RECEIVED 2018-2021)

Aquatic Natural Features (m)	Total
Restoration Required	14.7
Restoration Completed <i>with Project funds</i>	10.0
Restoration Completed <i>with Surplus funds</i>	150.0
Future Restoration to be Completed <i>with Project funds</i> (Based on funds in Account)	0.0
Future Restoration to be Completed <i>with Surplus funds</i> (Based on funds in Account)	0.0
Total Restoration Secured <i>with Project funds</i> Completed + Future	10.0
Total Restoration Secured <i>with Surplus funds</i> Completed + Future	150.0
Restoration Balance <i>with Project funds</i> Total Restoration – Required	-4.7
Restoration Balance <i>with Surplus funds</i> Total Restoration – Required	150.0
Grand Total	145.3

The results of Table 1a show that for losses where compensation was applied and funds were received as cash-in-lieu, there is a projected net gain for terrestrial natural features (22.7 ha). However, when looking at the terrestrial natural feature types individually, we see a net loss projected for meadow habitat (-7.1 ha). This is the result of older agreements 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 gain for aquatic natural features (145.3 m), which is due to surplus fund investment in simple and effective stream restoration. Without surplus fund reallocation, TRCA would have seen a 0.3 ha deficit in wetlands and 4.7 m deficit in streams, largely due to the restoration planning process taking longer than one year to complete, cost increases, and not receiving the full typical amount for stream restoration.

When TRCA 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/spacing, 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 can go toward offsetting Ecosystem Compensation Program management costs and underfunded projects to reach the required restoration targets and provide a net gain where possible.

In addition to restoring the structure of the lost habitat, it is also critical to ensure the overall land base of the protected natural system is not reduced over time. Some of the restoration outlined above is occurring on lands

TRCA owned prior to the impact. Therefore, although there is a net gain in habitat, there remains a net loss in the overall land base of the natural system. Securing new lands for habitat restoration through the compensation process remains a challenge. Despite these challenges there have been some successful land base outcomes.

The compensation projects that TRCA was involved with in 2021 were primarily related to infrastructure projects (15 of the 16) and therefore resulted in little new cash-in-lieu being received to compensate for lost land base, since this is not a requirement for infrastructure projects. The one development project which did result in TRCA receiving land base funds in 2021 to offset for losses to the natural heritage system is included in Table 1c below.

Between 2018 and 2021 there were 0.7 ha of natural heritage system removed and compensated for through development projects. Land base compensation funds were leveraged to secure a total of 62.6 ha of new land in TRCA ownership, of which 35.5 ha will be restored and added into the natural heritage system.

TABLE 1C. LAND BASE COMPENSATION ACROSS TRCA'S JURISDICTION (FUNDS RECEIVED 2018-2021)

Land base Compensation (ha)	Total
Land base Required for lost Natural Heritage System	0.7
Land base Acquired outside the Natural Heritage System	35.5
Land base Acquired within the Natural Heritage System	27.1
Funds for Future Lands Acquisition	\$ 551,000.00
Total Lands Secured Completed + Future	62.6+
Lands Balance Total Restoration – Required	61.9+

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 follow the Metrolinx Vegetation Guideline (2020) requirements. Restoration to offset Metrolinx tree removals is also being implemented ahead of removals where possible 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 fundamental elements are included in each agreement such as impact site, compensation required and agreed to, and direction on how funds are to be used. 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 and update in 2021 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 reduces the administrative burden and increases 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 Completion reports were updated to improve communication on compensation files once complete and communicate this back to the Project Review Team. Thirty-one briefs were prepared this year and circulated within the Project Review Team for approval prior to starting restoration projects and transferring funds. Accountability is also upheld by preparing 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 process and decisions, as well as details on proposed implementation
- Post-construction assessment reporting 1, 3, and 5 years after completion, in addition to pre- and post-restoration implementation monitoring
- Project completion reports that summarize project implementation results and lessons learned if appropriate
- Financial tracking

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

Note that this reporting only covers projects implemented by TRCA.

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:

- Clear lines of communication between Project Review Team members by 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, 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
- 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 compensation projects. However, it is unrealistic to expect 100% consistency as many different factors affect each file, including the mechanism for compensation. The mechanism may be internal and tied to the Conservation Authority (CA) permit, or external and through another process, and therefore may vary from TRCA Guideline, however in all cases TRCA strives for consistency with the Guideline.

Table 2, Funds Received and Consistency with TRCA Guideline, presents cash-in-lieu funds received by TRCA compared with funds requested in 2018-2021. This table shows that over the last four years TRCA successfully negotiated full cost recovery for restoration projects 97% 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 (2018-2021)	Consistency %
Equal to Requested	97%
Less than Requested	3%
Total	100%

Before the Guideline was developed, there was less emphasis on keeping restoration within the municipality or watershed where the compensation project occurred; under the Guideline, adherence to this principle has become more consistent. Of the funds received between 2018 and 2021, 98% of restoration projects were undertaken in the same municipality and 92% were in the same watershed. When looking at funds received in 2021 alone, 100% of restoration projects were implemented in the same municipality, and 92% were in the same watershed. Tables 3a and 3b compare where compensation 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. For example, in 2018-2021 there were thirteen restoration projects funded by compensation projects in Toronto: twelve of the restoration projects were implemented within Toronto, and one had compensation funds from the Toronto waterfront which, through agreement between TRCA, Toronto, and DFO, were applied to a restoration project in Ajax, as both the impact and restoration are in coastal wetlands along the waterfront.

TABLE 3A. COMPARISON OF COMPENSATION FUNDING SOURCES AND EXPENDITURES BY MUNICIPALITY (2018-2021)

Municipality Where Restoration Occurred	Municipality where Compensation Project Occurred										# of Restoration Projects
	Ajax	Brampton	Caledon	King	Markham	Pickering	Richmond Hill	Toronto	Vaughan	Whitchurch - Stouffville	
Ajax	3							1			4
Brampton		8									8
Caledon			4								4
King				2							2
Markham					5						5
Pickering						14					14
Richmond Hill							6				6
Toronto								12			12
Vaughan									8		8
Whitchurch - Stouffville										1	1
# of Restoration Projects	3	8	4	2	5	14	6	13	8	1	64

TABLE 3B. COMPARISON OF COMPENSATION FUNDING SOURCES AND EXPENDITURES BY WATERSHED (2018-2021)

Watershed Where Restoration Occurred	Watershed Where Compensation Project Occurred												# of Restoration Projects
	Carruthers	Don	Duffins	Etobicoke	Frenchman's Bay	Highland	Humber	Mimico	Petticoat	Rouge	Various	Waterfront	
Carruthers	1												1
Don		2											2
Duffins			14									1	15
Etobicoke				4				1			1		6
Frenchman's Bay					1								1
Highland		1				2							3
Humber							18			1	1		20
Mimico							1						1
Petticoat									1				1
Rouge							1			6	5		12
Waterfront						1					1		2
# of Restoration Projects	1	3	14	4	1	3	20	1	1	7	8	1	64

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 and 2021 was 4.7 km, and the maximum distance of 29.0 km resulted from the 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 5.2 km, and the maximum distance is that same 29.0 km. Comparing these numbers against future reporting will help to assess TRCA's ability to find restoration compensation sites near impacted areas.

TABLE 4A. RESTORATION PROJECT DISTANCE FROM COMPENSATION IMPACT BY MUNICIPALITY 1994-2021

Municipality	Average Distance (km)	Maximum Distance (km)
Ajax	1.5	3.1
Brampton	2.1	11.1
Caledon	3.0	11.1
King	11.4	13.9
Markham	6.1	10.3
Mississauga	3.1	6.4
Pickering	2.5	9.5
Richmond Hill	3.3	5.7
Toronto	7.9	29.0
Vaughan	2.0	8.8
Whitchurch-Stouffville	8.9	8.9
Overall	4.7	29.0

TABLE 4B. RESTORATION PROJECT DISTANCE FROM COMPENSATION IMPACT BY WATERSHED 1994-2021

Watershed	Average Distance (km)	Maximum Distance (km)
Carruthers	2.4	5.2
Don	3.8	9.6
Duffins	2.4	8.9
Etobicoke	3.8	11.1
Frenchman's Bay	4.6	4.6
Highland	5.3	19.1
Humber	2.2	13.8
Mimico	2.2	4.3
Petticoat	0.5	0.9
Rouge	3.6	9.3
Waterfront	21.8	29.0
Overall	5.2	29.0

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.

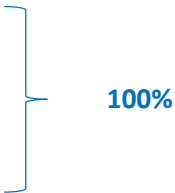
Targets for time lag goals were set in the 2019 program summary report.

- 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
- Time from receipt of cash-in-lieu funds to project completion to be within 7 years

Tables 5-7 indicate that TRCA has met these goals for 2018-2021, with a few exceptions. Negative numbers in the time lag column indicate that restoration (planning and/or implementation) began prior to receiving funds, and in some cases this is because of invoicing after works have been completed as per agreement. This 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 beyond four years represent estimates of future activities beyond 2021 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	2%
-2	1	2%
0	38	73%
1	12	23%
Grand Total	52	100%



Note: 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
-2	1	2%
0	22	45%
1	11	22%
2	6	12%
3	4	8%
4	5	10%
Grand Total	49	100%

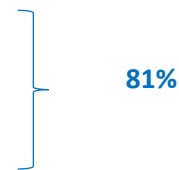
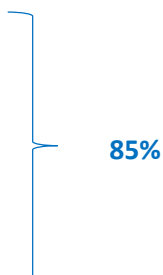


TABLE 7. TIME INTERVAL BETWEEN RECEIVING FUNDS AND COMPENSATION PROJECT FILE COMPLETION

Time Lag (Years)	# of Projects	% of Projects
0	7	15%
1	7	15%
2	2	4%
3	1	2%
5	14	30%
6	3	6%
7	6	13%
8	3	6%
9	4	9%
Grand Total	47	100%



Note: Greater than 4-year time lag represents estimate of future activities beyond 2018-2021.

The assessment of TRCA restoration implementation turn-around timelines and time lags shows that TRCA has met the targets set out in the Framework of 2019. Some delays in 2021 were experienced in project implementation, however these are almost entirely attributed to projects associated with the Seaton Lands in Pickering due to delays coordinating access to these lands.

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 project 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.

The Guideline Review, the Framework document, and 2020 Annual Summary Report were presented to BILD in 2021. The Framework and Summary report were provided for comment. This external Guideline review will continue into 2022 with stakeholders such as BILD, TRCA partner municipalities, and industry experts. The results of the full Guideline review will be finalized in a report that is scheduled for completion in 2022.

In 2021 TRCA worked to understand and close gaps in existing systems. Restoration and Resource Management (RRM) continues to work with the Finance and ITRM business units to further refine the Compensation Database, including the information it can store and report, and its connections to other internal databases.

Major adaptations that occurred during 2021 included:

- Internal and External review of the application of the Guideline began and will be completed in 2022.
- Internal and External review of the Basal Area concept within the Guideline was undertaken and found further support.
- Review of TRCA Restoration Cost Typical (2017). Cost increases averaged 35%, and can be primarily attributed to inflation since 2017, administrative updates, and technical improvements informed by new science and best management practices. These rates have been reviewed and supported by the PRT and Senior Leadership and have therefore been updated for 2021. Costs are constantly reviewed as they are subject to change with market forces and supply chain concerns and will be updated further if necessary.
- Review and update the Framework to more fully describe the financial processes related to compensation funds at year-end.
- Review and update the Restoration Project Completion report template.
- Review of TRCA led projects and how they intersect with compensation and the drafting of an Internal playbook to assist with tracking compensation on TRCA led projects to be discussed further in 2022.
- Updating the RRM project tracking database following staff reorganization earlier this year to better account for all projects that RRM staff complete and link them back to compensation projects.

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 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, 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 and shows that TRCA is 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, surplus funds remaining once restoration requirements were met on one project were used to provide value-added restoration (i.e., more natural features) to other projects. As noted earlier, there is currently an 7.1 ha deficit in meadow habitat resulting from undervaluing the cost of restoration. To address the continued restoration requirement for meadow, TRCA will continue to implement restoration projects in an efficient manner and look

for opportunities where surplus funds can be leveraged with new funds to meet the required compensation targets. TRCA will also be reviewing the restoration typical costs from the perspective of minimum costs per hectare to account for situations where restoration is to occur at a known location and to assist with negotiations should time not allow for an actual project budget to be provided.

To better track restoration gains, TRCA will investigate methods of incorporating into the Compensation Database other business units (including Erosion Risk Management, Construction Services, Professional Services, and Property Assets and Risk Management) currently implementing projects that may also possess compensation components. This will ensure that all project activities implemented with compensation funds are tracked accordingly.

Tracking internal impacts and compensation would also add additional information to the ecosystem net balance equations. TRCA projects are typically self-compensating or satisfied through on-site restoration, 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 would need to 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 business units will continue toward more integration of data to improve communication and reporting.

Goal 2: Accountability

Accountability is a key element of the Ecosystem Compensation Program and as such TRCA continues to look for ways to improve tracking and reporting. TRCA's review of current practices and the application of the Guideline is an example of this. A comprehensive Guideline review was initiated in 2021 to identify successes and challenges of its application, and to make recommendations for future improvements. To date, an internal review of the Guideline and an external expert review of the basal area approach to determining compensation ratios have been completed. The results of the review to date support the success of the Guideline in improving compensation outcomes including the continued use of basal area as a surrogate for ecosystem structure and function. The Guideline review will be completed in 2022 including seeking feedback from BILD and TRCAs municipal partners and engaging additional experts in the fields of wetland ecology and ecosystem offsetting. A report will be brought to the TRCA Board with the results of the review including recommendations for improving the Guideline.

TRCA is also investigating whether an internal playbook for tracking compensation on TRCA led projects would provide further clarity on the net balance equations. TRCA has finalized templates for compensation agreements in 2021 which will provide clear information in a standard format to everyone involved. These revenue agreements will also be reviewed by TRCA legal prior to execution to provide improved accountability.

Goal 3: Transparency

The Ecosystem Compensation Program has become more transparent since the adoption of the Guideline and the implementation of the Framework. As the program develops, it is 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 the Restoration Project Completion reports, revisions to the compensation agreements 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, allowing for more useful information to be retrieved. Additionally, a more consistent approach to roles, responsibilities, and workflow has provided clear interdepartmental communication and overall understanding of policies and procedures related to compensation practices. Although each file is different and negotiations could affect the eventual outcome, staff 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 are referenced below and were developed by looking at the then-current time lags for the full set of restoration projects. The 2021 assessment (2018-2021) shows that TRCA achieved the follow percentages:

- 100% of projects were started or initiated within 1 year of receipt of funds; this is consistent with 2020.
- 81% of projects were done active implementation within 2 years of receipt of funds; this is down from 96% reported in 2020. Goals that were not met are related to restoration project planning being slowed due to delays caused by coordinating access to non TRCA property, increased timelines due to Covid, and alterations to project designs due to unexpected site conditions.
- 85% of projects were completed and funds fully spent (including monitoring and maintenance) within 7 years of receipt of funds; this is down from 93% reported in 2020.

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, RRM hired a new coordinator to assist with program coordination and restoration project implementation resulting from compensation projects. It is also important to note when viewing the above numbers 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 become delayed due to setbacks in securing restoration project permitting and partner agreements. 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 complex 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
- Project 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 gaps.

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 2022.

No Net Loss: To help assess the net balance of compensation decisions, Compensation Database updates and integration across Divisions will continue. In addition, TRCA will investigate the need for a Playbook to direct how TRCA led projects (those that result in an impact and associated compensation) get tracked in the Compensation Database. TRCA will also be reviewing restoration typical costs to determine if a minimum cost per hectare can be developed to assist with planning file negotiations. TRCA will also work to finalize the ERSI Dashboard for reporting on the success of individual projects throughout the 5 years of assessments.

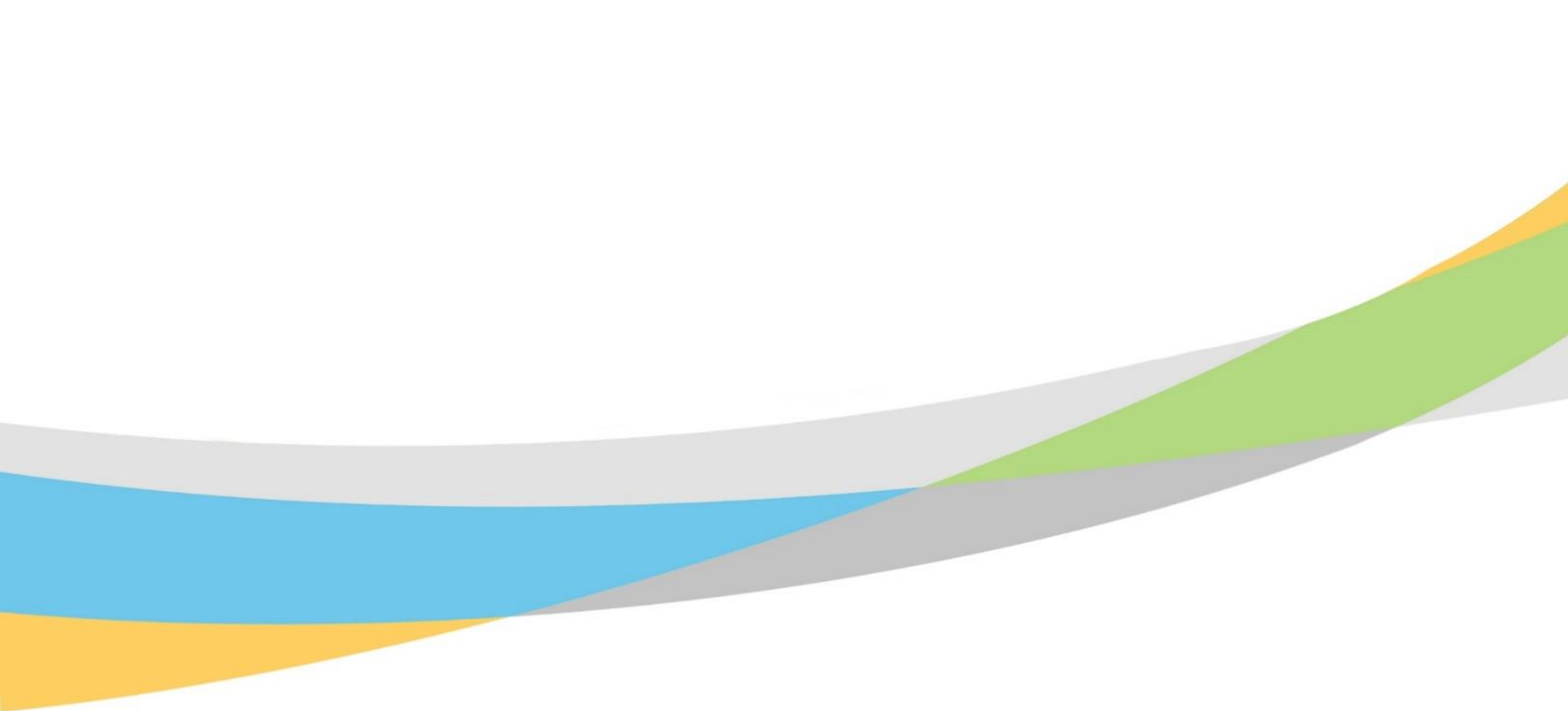
Accountability: Staff will continue to improve the Compensation Database to ensure it captures information required for file review and reporting. It is important that the information is easily accessible to both the Project and Program Review Teams, as the annual Ecosystem Compensation Program summary report will depend on accurate outputs from the Compensation Database.

Transparency: TRCA will continue to review processes to determine if there are steps that can be taken to improve transparency of the Compensation Program in 2022 for our partners and stakeholders.

Consistency: The Program Review Team will continue to meet and discuss items that require clarity or adaptation so that TRCA can 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: Compensation Database updates to automate summary report generation in 2022 will be investigated to 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 address feedback from stakeholders. There are three principal areas that will continue to be investigated and addressed. First is the assessment of a minimum cost per hectare for each restoration cost typical, this will ensure that when scaling down the costs for fractions of hectare losses, the minimum required costs are received. Second, continue to investigate 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. Last, continue to discuss and develop a Playbook to track compensation requirements and results of TRCA led projects. In support of the adaptability goal TRCA will continue the external Guideline review in 2022 with stakeholders such as BILD, TRCA partner municipalities, and industry experts. The results of the full Guideline review will be finalized in a report that is scheduled for completion in 2022.



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