

## **2017 Resource Analysis and Scientific Services Annual Report**

The Resource Analysis and Scientific Services (RASS) Division of the Adirondack Park Agency is responsible for providing scientific and engineering assistance to all other Agency divisions. Often times RASS staff act as the interface between Agency Divisions offering technical determinations and providing insight on environmental issues.

RASS staff work to educate the project sponsor regarding the natural resources on the project site and the reasons for their protection. RASS staff conduct site visits and provide guidance to the applicant on a design that will avoid adverse environmental impacts to wetlands and natural resources on the project site. Staff also provide wetland determinations and field delineations to landowners which is an integral and often first-step in the planning and design phases of projects.

RASS staff work on projects, enforcement cases, variances, and policies, and provide technical advice regarding a wide variety of topics including making height, navigability and mean high water mark determinations, identifying, delineating and evaluating wetlands, assessing wildlife impacts, management of invasive species, and assessing forest management activities. All Agency transactions that involve wetlands, soils, wastewater treatment, invasive species, surface waters or forests pass through RASS for resource analysis and recommendations. RASS professionals also provide expert testimony under oath regarding their areas of specialization.

### **Engineering**

Evaluating existing and proposed development within the Park requires professional engineering services and technical analysis that is based upon sound science and engineering judgment and is consistent with applicable laws, regulations, standards, policies and guidance documents. RASS engineering staff routinely conduct site visits, review professionally prepared plans and provide recommendations and alternative designs where appropriate. Subject areas, include, but are not limited to, on-site wastewater treatment, site design and access, stormwater management, erosion and sediment control, dams, bridges, roads, traffic, noise and adequacy of municipal services. The technical analysis provided by RASS Engineering staff includes professional opinions that are protective of life, health, and the natural resources of the Park.

RASS staff continued tracking the number of engineering reviews by category as well as reviews by Agency Division in 2017. The purpose is to provide an overview of how engineering services are utilized at the Agency and the amount of time spent on some of the more common review areas. Engineering staff also completed 119 site visits in 2017, compared to 122 site visits in 2016.

In 2017 RASS Engineering staff provided written technical recommendations (by Division) as follows (see Figure 1):

- Regulatory Programs (Permit Applications) –478
- Legal (Jurisdictional Office, legal reviews) –94
- Legal (Enforcement) –62
- Planning (Local Government/Map Amendments/State Land-30

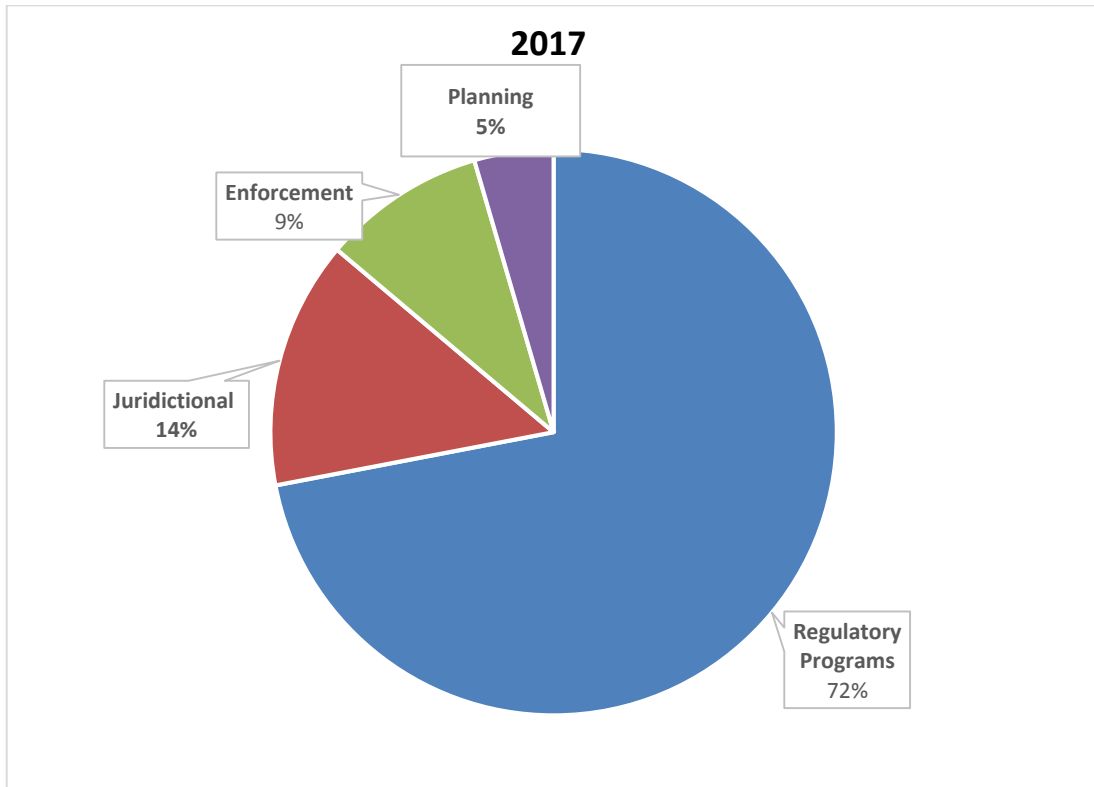


Figure 1. Engineering reviews by Agency Division (2017).

Engineering staff also organized reviews by category which is found in Table 1 and depicted in Figure 2. The following is a description of categories reviewed by Agency engineers:

On-Site Wastewater Treatment Systems - typical reviews consist of evaluation of plans prepared by a New York State Licensed Professional Engineer for compliance with applicable laws, regulations, standards and policies for protection of health and water resources.

Stormwater Management - typical reviews consist of evaluation of plans prepared by a qualified professional for compliance with applicable laws, regulations, standards and policies. Through the application of the Agency's Development Considerations, the goal is to prevent surface and groundwater impacts from stormwater runoff associated with development proposals. Potential impacts from untreated stormwater runoff include a decline in surface water quality, diminished groundwater recharge and quality, stream channel erosion and habitat degradation, increased overbank flooding, floodplain expansion and impacts to aquatic organisms.

Shoreline - reviews include a broad spectrum of programs including projects, variances, jurisdictional determinations, State land and enforcement cases. Typical

evaluations include both office plan reviews and site visits for structures such as new and expanded single family dwelling construction, retaining walls, boathouses, docks, boardwalks, decks and other accessory structures.

Shoreline Variance Proposals - reviews include proposals submitted which require variances, jurisdictional determinations, or enforcement cases.

Table 1. Engineering reviews by category.

OSWTS Reviews	327
Stormwater Management	221
Shoreline Reviews	218
Shoreline Variance Proposals	160

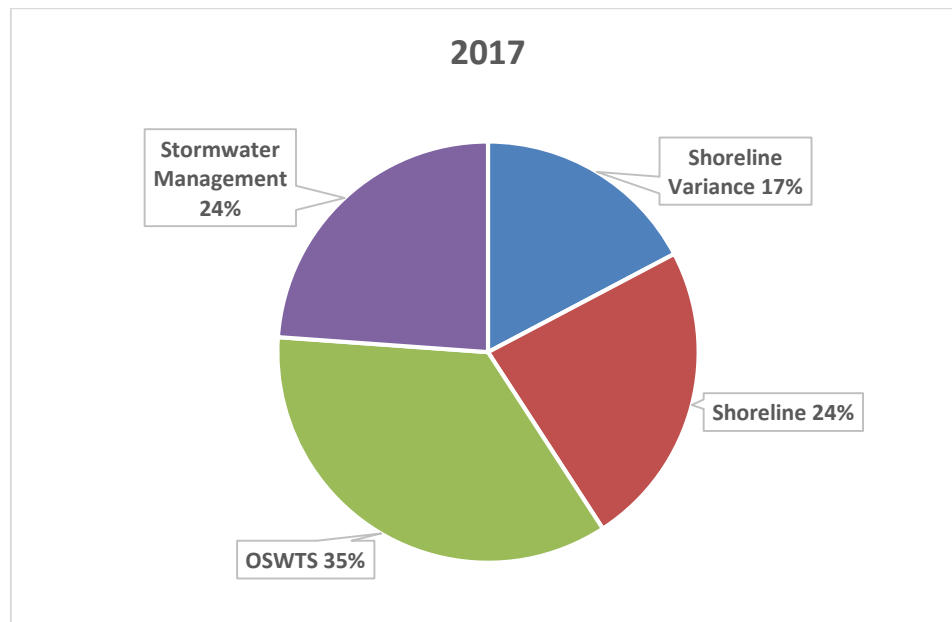


Figure 2. Engineering reviews by category (2017).

## Soils

A qualified soil scientist on the Agency staff provides an essential service to the public and minimizes the soil component of on-site wastewater treatment system (OSWTS) analysis for Agency engineers. This process is vital so Agency engineering staff can efficiently issue approvals for submitted OSWTS designs.

Deep Hole Test Pit Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
<b>Projects Involving DHTPs</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>6</b>	<b>12</b>	<b>12</b>	<b>15</b>	<b>11</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>5</b>	<b>90</b>
DHTPs Described by APA	2	0	2	7	19	18	14	8	7	10	12	6	105
DHTPs Described by Consultants	1	63	1	1	0	1	1	4	0	1	1	1	75
<b>Total DHTPs</b>	<b>3</b>	<b>63</b>	<b>3</b>	<b>8</b>	<b>19</b>	<b>19</b>	<b>15</b>	<b>12</b>	<b>7</b>	<b>11</b>	<b>13</b>	<b>7</b>	<b>180</b>
Approved Conventional Systems	2	60	2	1	9	7	9	9	4	9	3	4	119
Approved Shallow Systems	1	2	1	4	8	5	5	3	3	1	8	1	42
Did not Meet Agency Guidelines	0	1	0	3	2	7	1	0	0	1	2	2	19
Approved Conventional Systems %	67%	95%	67%	13%	47%	37%	60%	75%	57%	82%	23%	57%	66%
Approved Shallow Systems %	33%	3%	0%	50%	42%	26%	33%	25%	43%	9%	62%	14%	23%
Did not Meet Agency Guidelines %	0%	2%	0%	38%	11%	37%	7%	0%	0%	9%	15%	29%	11%
Approved Shallow Systems	1	2	1	4	8	5	5	3	3	1	8	1	42
Shallow Systems due to SHGWT	1	2	1	4	7	4	5	3	1	1	7	1	37
Shallow Systems due to Bedrock	0	0	0	0	1	1	0	0	2	0	1	0	5
Shallow Systems due to SHGWT %	100%	100%	100%	100%	88%	80%	100%	100%	33%	100%	88%	100%	88%
Shallow Systems due to Bedrock %	0%	0%	0%	0%	13%	20%	0%	0%	67%	0%	13%	0%	12%

In 2017 a total of 90 projects involving 180 deep-hole test pits (DHTPs) were reviewed by Agency staff (Table 2). The number of DHTPs increased slightly in 2017 as compared to 2016 (Figure 3). Of the 180 DHTPs, 105 were described by Agency staff and 75 were described by outside consultants. All data submitted by consultants is checked by Agency staff to ensure soil profile accuracy, separation requirements, and appropriate setback distances. In 2017, 66 percent of the test pits were approved for conventional on-site wastewater treatment systems OSWTSs, 23 percent were approved for shallow absorption OSWTSs, and 11 percent did not meet Agency guidelines (Figure 4).

Of the approved shallow systems 88 percent were due to shallow seasonal high groundwater and 12 percent were due to shallow bedrock.

Table 2. Deep-hole test pit statistics for 2017

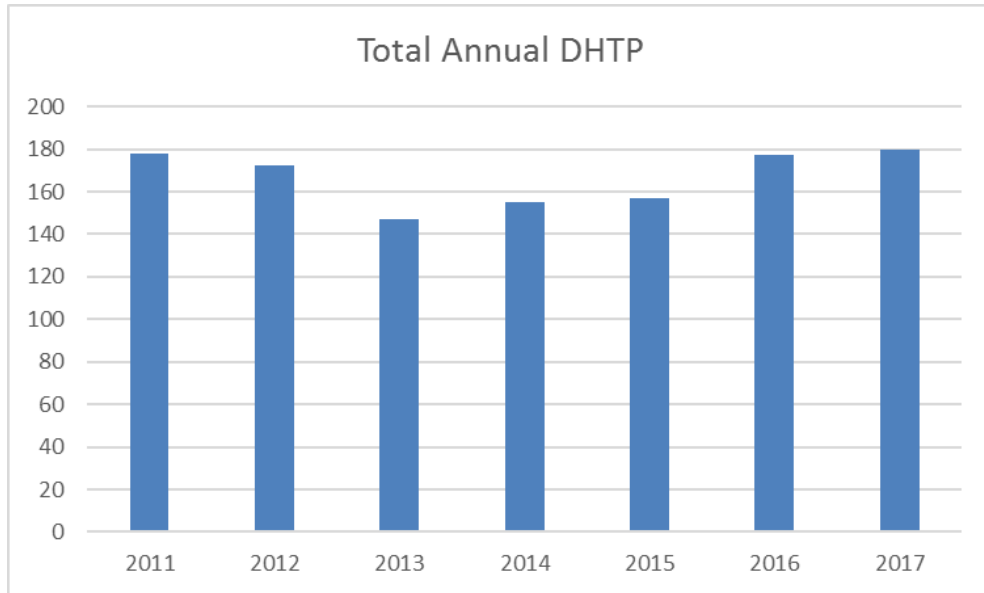


Figure 3. Deep-hole test pits reviewed by APA staff (2011- 2017).

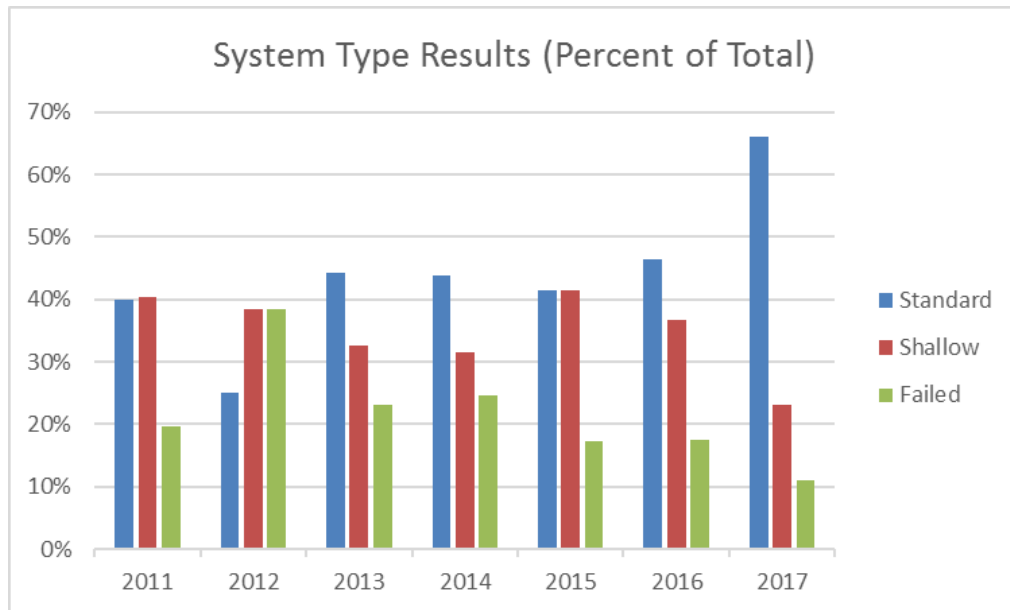


Figure 4. Number of approved shallow and conventional systems and number of systems that did not meet Agency guidelines (2011- 2017).

### Wetlands

Wetland involvement is a common jurisdictional trigger. The NYS Freshwater Wetlands Act and the APA Act have stringent requirements for regulated activities involving wetlands. The Agency's wetlands protection program including mapping, delineation, evaluation,

mitigation, and impact analysis has been and is considered proactive, responsive to public needs, and technologically advanced.

During 2017 a total of 235 wetland visits were made throughout the Park (Figure 5). This represents a slight decrease from 2016 which had 265 site visits. Each visit involved a wetland determination and/or delineation and most involve some educational component. Some of the wetland delineations, due to wetland size, took several days to complete. The average processing time of all 235 visits was 11 days (Table 3).



Figure 5. Wetland visits by year (2003 to 2017).

Table 3. Total wetland site visits by month and average processing time for wetland site visits.

Time Period	Number of requests received during month	Number completed	Interval for processing. (Date received to date scheduled for those received in that month)	Number pending
January	1	1	N/A	0
February	1	1	N/A	0
March	21	1	N/A	20
April	28	23	18	25
May	34	43	13	16
June	28	35	12	9
July	27	25	11	11
August	16	23	13	4
September	30	21	11	13
October	29	32	8	10
November	16	25	11	1
December	4	5	6	0
Cumulative for 2017	235	235	Average = 11	0

### Remote Sensing

RASS staff conducted 456 wetland air photo interpretations in 2017, mostly in support of other Agency divisions as summarized in Table 4 and depicted in Figure 6. Air photo interpretations are conducted with high-resolution digital stereo pairs of air photos viewed with state-of-the-art hardware and software bought through prior Agency EPA grants. This allows staff to respond to requests for wetland determinations in a timely manner and significantly reduces the need for on the ground wetland field visits. The number of air photo interpretations decreased in 2017 as depicted in Figure 7.

Table 4. Air photo interpretations by request.

	JIF	Referrals	Project Review	Enforcement	Public Requests	Staff Requests (State Lands)	Consultants/Surveyors	Total
Jan.	21	4	7	2			6	40
Feb.	11	1	7	1		3	1	24
March	22	2	7	3		3	7	44
April	28		12	1	2	2		45
May	28	2	8	9	1	1	1	50
June	21	10	5	2		1	3	42
July	25	3	3	2	1		2	36
August	17	3	10	4	1	2	3	40
Sept.	13	6	1	6	3	2	1	32
Oct.	21	4	9	3	2	3	3	45
Nov.	17	2	5	2		1		27
Dec.	15	4	6	2		3	1	31
Total	239	41	80	37	10	21	28	456

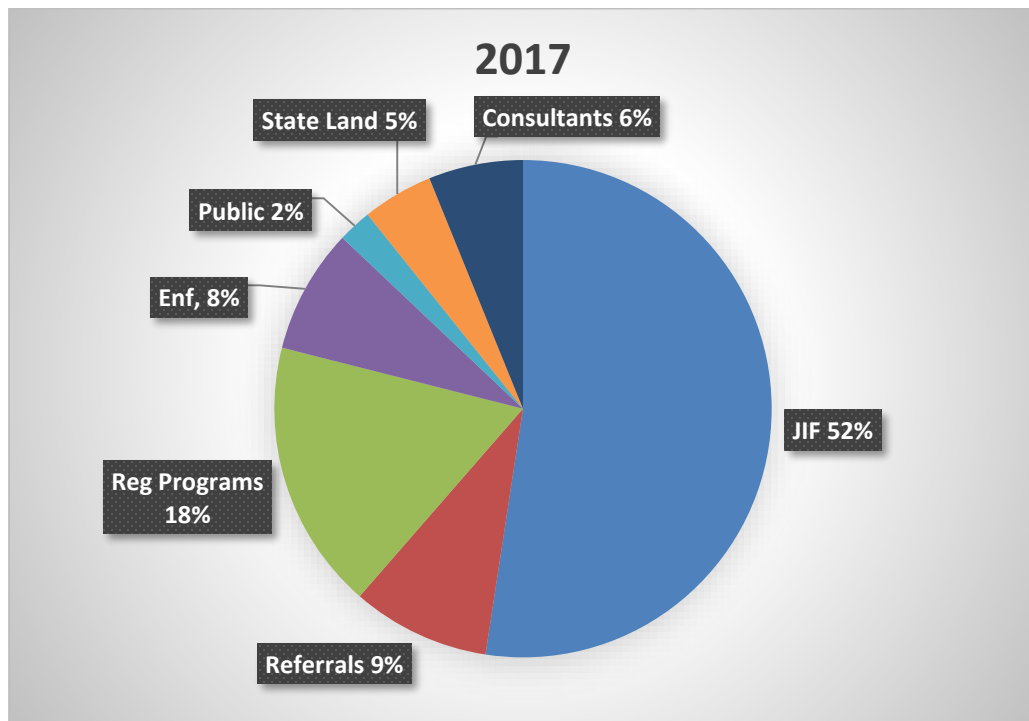


Figure 6. Air photo interpretations by request.



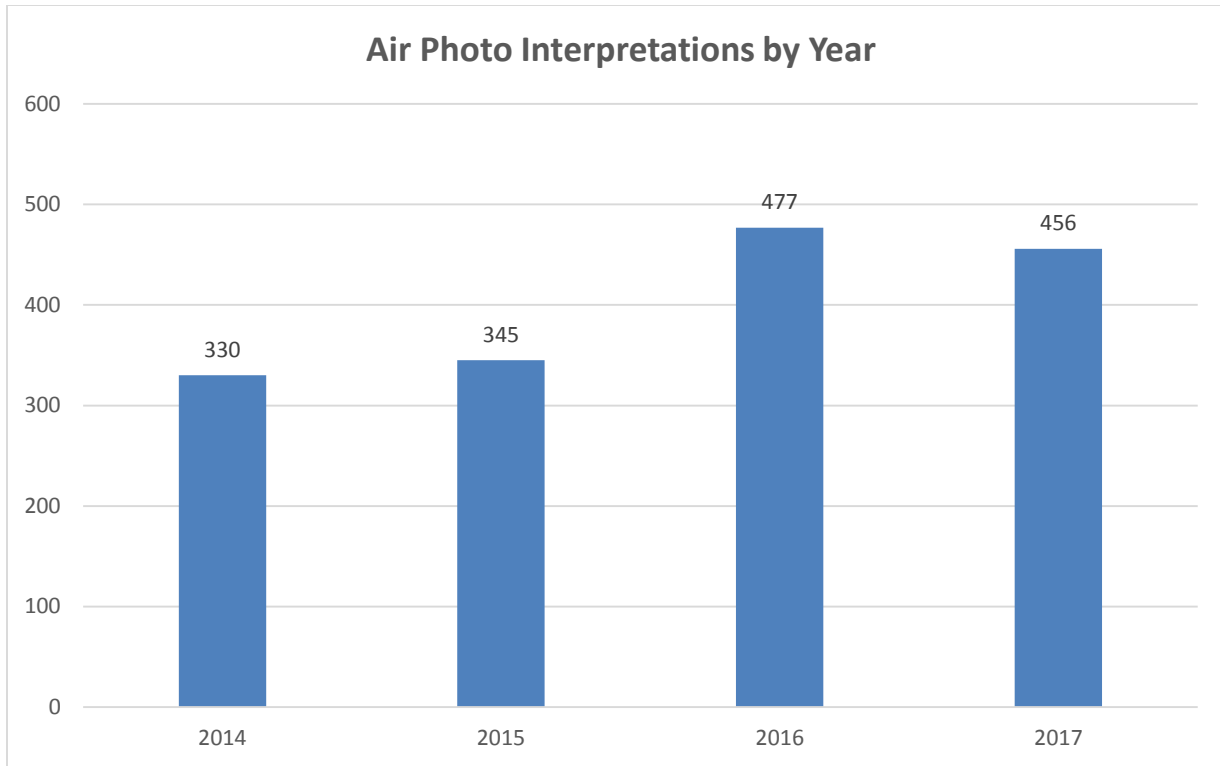


Figure 7. Total number of air photo interpretations by year

### **Biological, Freshwater and Forestry Resources**

RASS ecologists and forestry specialist staff track the number of biological, freshwater wetlands, and forestry related reviews by category. The purpose is to provide an overview of time spent on some of the more common review areas for staff and provides an overview of how wetland biologists, freshwater ecologist and forestry specialist services are utilized at the Agency. As depicted in Figure 8, wetland related project reviews accounted for approximately 54 percent of the reviews and freshwater resource related projects, mostly attributed to aquatic invasive species management, represented 21 percent of the reviews. Forestry related reviews also accounted for 13 percent by category.

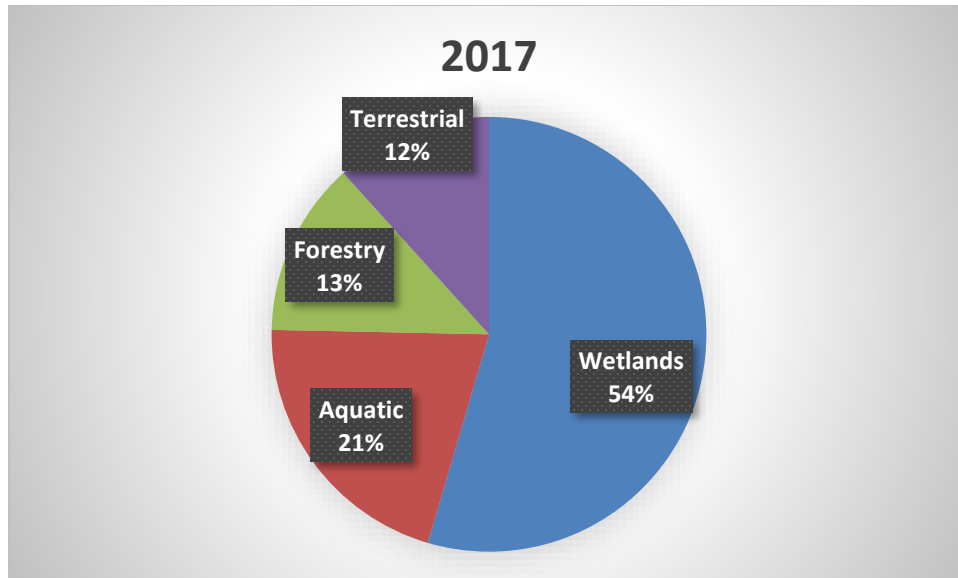


Figure 8. Wetlands, biological resources, freshwater resources (aquatic) and forestry project reviews.

### Freshwater Resources

In 2017 Agency staff worked with Adirondack Park Invasive Plant Program's (APIPP) Aquatic Invasives Project Coordinator to evaluate the efficacy of various netting techniques for early detection of spiny waterflea (*Bythotrephes longimanus*) in Adirondack Waters. The research helped APIPP to understand how net mesh size and net tow profiles influenced their ability to collect the invasive zooplankton. In addition, during the 2017 field season APA staff worked with APIPP to evaluate the CiBioBase lake bottom mapping technology. This tool has the potential to help inform APIPP and other stakeholders of areas within a waterbody where AIS species may be found (based upon substrate type, depth, and aquatic vegetation). The technology is of particular interest to Agency staff as it is advertised as technology that can accurately map floating leaf and deep-water marshes. The work was presented by APIPP at the Lake Champlain Basin Program's conference in Burlington Vermont in January, 2018.

During the fall Agency staff participated in the Lake Champlain Basin Program's Rapid Response review of a newly discovered alewife infestation in Lake Carmi Lake (Vermont). The Rapid Response team was established in 2009 to provide technical guidance regarding new introductions of aquatic invasive species anywhere within the Lake Champlain watershed.

Agency staff served on the Invasive Species Council, the Adirondack Aquatic Invasive Species Advisory Committee, the NYS Benthic Barrier workgroup, the Lake George Asian clam task force, the Great Sacandaga Lake Advisory Council, and is a partner with the APIPP. Staff assessed three backcountry waterbodies for the presence of AIS; the results of which were provided to APIPP.

## **Forests**

The forests of the Adirondacks are integral to the character of the Park, creating a living landscape that provides wildlife habitat, biodiversity, purification of water resources, and economic and recreational opportunities. Forests on State lands, in many cases having been preserved from logging for more than a century, are characterized by steadily maturing stands, while many privately owned forests are managed for timber resulting in younger, early succession forests. This age diversity comprises a mosaic of habitats supporting a diverse variety of flora and fauna.

Ongoing human disturbance, including invasive pests and pathogens, climate disruption, acidic deposition, and poor forest management, pose the threat of significant impairment. Agency practices encourage sustainable forest management practices, with the intent of creating resilient, healthy forests more capable of resisting these perturbation factors.

In 2017, RASS staff reviewed two proposals for jurisdictional timber harvesting projects on private lands. Both projects were designed to meet specific silvicultural goals, based upon existing forest conditions, with the intent of creating favorable conditions for long-term forest health and timber value. Both project sites were within New York State Working Forest Conservation Easements, subject to the rigorous standards of third-party forest certifications. Agency staff also conducted compliance reviews on a number of previously issued permits for jurisdictional timber harvests, to insure the protections of the permit conditions were being followed. These timber management projects have been the result of a continued expansion of communications between Agency staff and managers of large tracts of Adirondack timberlands, which has enabled Agency review of a management activity integral to the fabric of the Adirondack Park.

During the Agency meeting in September Lyme Timber Company representatives lead the Agency Board on a tour of a recently permitted timber harvest site. Agency Permit 2015-28, issued April 23, 2015, authorized the harvest on 549 acres of Lyme's 16,159 acre Colton-Piercefield Tract in the Town of Piercefield, a property which is subject to a New York State Working Forest Conservation Easement. A variety of silvicultural treatments were employed on the site, including overstory removal, thinning, clearcut, shelterwood establishment and seed tree establishment. The harvest, conducted in accordance with third party sustainable forestry programs, was designed to capture the value of overstory trees in decline, while encouraging healthy, vigorous regeneration in the forest understory.

In 2017, RASS staff have continued to be engaged with State Agencies, forest health researchers, and the Adirondack Park Invasive Plant Program (APIPP) to monitor invasive pest disturbances within the Adirondack Park, including a response to detection of Hemlock Woolly Adelgid near Lake George in the summer and fall. Continued vigilance and public education regarding these threats will be increasingly important in coming years, as the spread of pests and our response to them will impact the future health of Adirondack forests.

## Committee and Organizational Affiliations

List of Committees or Organizations in which RASS Staff Participate

Committee Name	Staff Participant	Number of Meetings in 2017
Variance Application Committee	LaLonde/Purzycki	4
Lake Champlain Basin Program Technical Advisory Committee	Snizek	10
Lake Champlain Basin Program Aquatic Nuisance Species Committee	Snizek	2
Adirondack Aquatic Nuisance Species Committee	Walrath	Quarterly meetings
Great Sacandaga Lake Advisory Council	Walrath	1
New York State Federation of Lake Association (NYSFOLA)	Walrath	Annual meeting
Adirondack Park Invasive Plant Program (APIPP) Partner Meeting	Walrath	Quarterly
NYS Invasive Species Council	Snizek/Walrath	Quarterly
Lake George Asian Clam Taskforce	Walrath	1
Lake Champlain Basin Program AIS Rapid Response Team	Walrath	3
NYS Hydrilla Taskforce Conference Call	Walrath	4
NYS Benthic Barrier Workgroup	Walrath	2
Adirondack Lakes Alliance Meeting/Conference	Walrath	2
NYS Statewide PRISM Webinar	Walrath	Monthly
Lake George Salt Summit	Snizek/Walrath	1
SUNY ESF Ranger School Student Presentation	Ziemann	1
NYS Code Enforcement	O'Dell/Ziemann	1

Officer Training		
Wetlands and Floodplains for Real Estate Professionals	O'Dell	1
New York State Wetland Forum	O'Dell	1
Wetland Recognition Training for APA staff	O'Dell/Purzycki	1
Visual Impact Assessment Training for APA staff	O'Dell/Ziemann/Purzycki/LaLonde/Snizek	
Carrying Capacity Team	O'Dell	1
North Atlantic Aquatic Connectivity Collaborative Training (DOT)	O'Dell	1

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