

# **California Association for Research in Astronomy dba W. M. Keck Observatory**

(A Nonprofit California Public Benefit Corporation)

Financial Statements (With Independent Auditors' Report Thereon)

September 30, 2017 and 2016



### **Independent Auditors' Report**

The Board of Directors California Association for Research in Astronomy:

### **Report on the Financial Statements**

We have audited the accompanying financial statements of the California Association for Research in Astronomy, which comprise the statements of financial position as of September 30, 2017 and 2016, and the related statements of activities, and cash flows for the years then ended, and the related notes to financial statements.

### Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

#### Auditors' Responsibility

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

### **Opinion**

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the California Association for Research in Astronomy as of September 30, 2017 and 2016, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

### Other Reporting Required by Government Auditing Standards

In accordance with *Government Auditing Standards*, we have also issued our report dated February 16, 2018 on our consideration of the California Association for Research in Astronomy's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the California Association for Research in Astronomy's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the California Association for Research in Astronomy's internal control over financial control over financial reporting and compliance.

KKDLY LLC

Honolulu, Hawaii February 16, 2018

(A Nonprofit California Public Benefit Corporation)

### Statements of Financial Position

### September 30, 2017 and 2016

Assets	_	2017	2016
Current assets:			
Cash and cash equivalents (notes 2 and 3)	\$	8,958,030	\$ 11,944,040
Grants and contracts receivable		735,752	530,743
Prepaid expenses and other assets (note 11)		496,623	 342,040
Total current assets		10,190,405	12,816,823
Noncurrent assets:			
Long-term investments (note 3)		12,342,389	7,190,938
Property and equipment, net (notes 5 and 7)		47,940,808	49,872,715
Total assets	\$	70,473,602	\$ 69,880,476
Liabilities and Net Assets Current liabilities: Accounts payable and accrued expenses (note 11): Advances (note 2)	\$	3,212,218 18,130,230	\$ 3,239,559 15,670,340
Total current liabilities		21,342,448	 18,909,899
Net assets:			
Unrestricted		47,753,287	49,685,193
Unrestricted - board-designated (note 9)		804,560	698,323
Temporarily restricted (note 10)		573,307	 587,061
Total net assets		49,131,154	50,970,577
Commitments (notes 8 and 11)		-	 -
Total liabilities and net assets	\$	70,473,602	\$ 69,880,476

See accompanying notes to financial statements.

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### Statements of Activities

### Years Ended September 30, 2017 and 2016

	2017	2016
Changes in unrestricted net assets:		
Unrestricted operating support and revenues:		
Operating revenues (notes 1 and 4):		
University of California observatory operations	\$ 11,142,331	\$ 11,694,637
Other	9,889,334	8,039,268
Net unrealized gains on investments (note 3)	1,151,451	386,809
Interest income (note 3)	222,766	183,034
Contributions (note 9)	195,384	125,563
Net gain (loss) on disposal of assets (note 5)	657	(991,180)
Other income	135,091	122,815
Net assets released in satisfaction of equipment		
acquisition restrictions (note 10)	 991,799	 511,100
Total unrestricted revenues	 23,728,813	 20,072,046
Expenses (notes 5, 7, and 11):		
Program services:		
Observatory operations	18,101,578	18,243,797
Related party asset projects	3,512,084	3,122,348
Research	38,054	11,356
Administration and general	3,382,765	2,643,151
Fund-raising	 520,001	 383,459
Total expenses	 25,554,482	 24,404,111
Change in unrestricted net assets	 (1,825,669)	 (4,332,065)
Change in temporary restricted net assets (note 10):		
Contributions	978,045	609,587
Net assets released from restrictions	(991,799)	(511,100)
Change in temporarily restricted net assets	(13,754)	 98,487
Change in net assets	(1,839,423)	(4,233,578)
Net assets at beginning of year	 50,970,577	 55,204,155
Net assets at end of year	\$ 49,131,154	\$ 50,970,577

See accompanying notes to financial statements.

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### Statements of Cash Flows

### Years Ended September 30, 2017 and 2016

	2017		 2016	
Cash flows from operating activities:				
Change in net assets	\$	(1,839,423)	\$ (4,233,578)	
Adjustments to reconcile change in net assets to net cash				
provided by operating activities:				
Depreciation		7,124,534	6,350,096	
Net unrealized gains on investments		(1,151,451)	(386,809)	
Net loss (gain) on disposal of property and equipment		(657)	991,180	
Contributions restricted for investment in property				
and equipment		(648,099)	(609,587)	
Decrease (increase) in operating assets:				
Grants and contracts receivable, net		(205,009)	(13,597)	
Prepaid expenses and other assets		(154,583)	(163,725)	
Increase (decrease) in operating liabilities:				
Accounts payable and accrued expenses		(27,341)	297,555	
Advances		2,459,890	 4,263,295	
Net cash provided by operating activities		5,557,861	 6,494,830	
Cash flows from investing activities:				
Purchases of property and equipment		(5,217,470)	(2,951,416)	
Proceeds on sale of property and equipment		25,500	46,894	
Purchases of investments		(4,000,000)	 -	
Net cash used in investing activities		(9,191,970)	 (2,904,522)	
Cash flows provided by financing activities:				
Contributions restricted for investment in				
property and equipment		648,099	 609,587	
Net increase (decrease) in cash and cash equivalents		(2,986,010)	4,199,895	
Cash and cash equivalents at beginning of year		11,944,040	 7,744,145	
Cash and cash equivalents at end of year	\$	8,958,030	\$ 11,944,040	

See accompanying notes to financial statements.

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Schedule of Findings and Questioned Costs

Year Ended September 30, 2017

### (1) **Organization and Operations**

California Association for Research in Astronomy (CARA) is a nonprofit corporation formed by the California Institute of Technology (Caltech) and the University of California (UC) in January 1985 to build and operate the W. M. Keck Observatory (the Observatory) near the summit of Mauna Kea in Hawaii. Tax exempt under Section 501(c)(3) of the Internal Revenue Code, CARA is a nonprofit California public benefit corporation and, as such, is qualified as a nonprofit corporation in the state of Hawaii.

The principal purpose of CARA is to foster astronomical research and to provide technical direction for the development and operation of astronomical facilities on the island of Hawaii, principally on land owned by the state of Hawaii, leased to the University of Hawaii, and subleased to Caltech. The Observatory is owned by Caltech and is leased to CARA for \$1 per year. In consideration for subleasing the land to Caltech for \$1 per year through 2033, the University of Hawaii receives an opportunity to use the Observatory and related facilities and improvements. The astronomical facilities include two 10-meter telescopes (Keck I and Keck II), related instrumentation, adaptive optics technology, support facilities, and required infrastructure improvements.

The costs of development of the Observatory and the development of adaptive optics technology were borne by Caltech, the majority of which were funded by grants from the W. M. Keck Foundation (the Foundation). Caltech's funding for Keck I and Keck II development costs was \$75,222,000 and \$78,600,000, respectively. Keck I development was completed in 1996; Keck II was largely completed in 1998 with the remaining development costs completely expended by 2005.

UC provided financial support to CARA for pre-operating costs during the Observatory's development periods, acquisition of focal plane instrumentation, and observatory operations. UC provides continuing operating support for Keck I operations in the amount of \$3,500,000 per year, which continues through fiscal year 2017, and \$1,750,000 for the six-month period ending March 31, 2018, all measured in 1984 dollars. UC provides support for Keck II operations in the amount of \$2,105,000 per year, which continues through fiscal year 2017, and \$1,052,500 for the six-month period ending March 31, 2018, all measured in 1990 dollars. For fiscal years 2017 and 2016, CARA received operating support for Keck I operations of \$8,391,250 and \$8,270,186, respectively. For fiscal years 2017 and 2016, CARA received operating support for Keck II operations of \$6,283,150 and \$6,041,498, respectively. For fiscal years 2017 and 2016, CARA recognized operating revenue for Keck I and Keck II operations from UC of \$11,142,331 and \$11,694,637 respectively.

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Schedule of Findings and Questioned Costs

Year Ended September 30, 2017

### (2) Summary of Significant Accounting Policies

#### **Basis of Presentation**

The accompanying financial statements have been prepared using the accrual basis of accounting and accounting principles generally accepted in the United States of America (GAAP).

#### Net Assets

The financial statements report net assets and changes in net assets based upon the existence or absence of restrictions on use that are placed by its donors, as follows:

*Unrestricted Net Assets* – net assets that are not subject to donor-imposed stipulations and that may be expended for any purpose in performing the objectives of CARA.

*Temporarily Restricted Net Assets* – net assets subject to donor-imposed stipulations that may or will be met either by actions and/or the passage of time. As the restrictions are satisfied, temporarily restricted net assets are reclassified and reported in the accompanying financial statements as net assets released from restrictions.

*Permanently Restricted Net Assets* – net assets subject to donor-imposed stipulations that resources must be maintained in perpetuity. As of September 30, 2017 and 2016, CARA had no permanently restricted net assets.

#### Cash and Cash Equivalents

CARA considers all highly liquid instruments with original maturities of three months or less to be cash equivalents. As of September 30, 2017 and 2016, cash equivalents of \$8,863,094 and \$11,635,844, respectively, were invested in the University of California Short-term Investment Pool (UC STIP), and reported at fair value in the accompanying financial statements. See Note 3 for further discussion and disclosures related to fair value measurements.

#### Long-term Investments

CARA's investments in the University of California General Endowment Pool (UC GEP) are stated at fair value. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (an exit price). See Note 3 for further discussion and disclosures related to fair value measurements.

Purchases and sales of securities are recorded on a trade-date basis. Interest income is recorded on the accrual basis. Dividends are recorded on the ex-dividend date.

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Year Ended September 30, 2017

Realized and unrealized gains (losses) on investments are based on the difference between the fair value of assets at the beginning of the year, or at the time of purchase for assets purchased during the year, and the related fair value on the day investments are sold with respect to realized gains (losses), or on the last day of the year for unrealized gains (losses).

### **Property and Equipment**

Expenditures incurred by CARA for observatory instrumentation and facilities, operating equipment, and vehicles are capitalized at cost, except for donated property that is valued at fair market value at the date of the gift, and depreciated when placed in service. Depreciation is provided over the estimated useful lives of the respective assets using the straight-line method. The estimated useful lives are as follows:

	Estimated
Class of assets	useful lives
Observatory instrumentation	5-20 years
Observatory facility	3-15 years
Vehicles and equipment	3-20 years

CARA reports contributions designated by donors to acquire long-lived assets as restricted support. Absent explicit donor stipulations about how long those long-lived assets must be maintained, CARA reports expirations of donor restrictions for construction in progress when costs are incurred.

### Advances

Operating and instrumentation funds received from UC are recorded as advances until expended for operating expenditures, observatory instrumentation, or vehicles and equipment. Funds received from the Association of Universities for Research in Astronomy (AURA) and other foundation grants for the purpose of developing certain instruments for the Keck telescopes or adaptive optics development are recorded as advances until expended for their stated purpose.

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Year Ended September 30, 2017

A summary of advances at September 30, 2017 and 2016 follows:

	 2017		2016
University of California:			
Observatory operations	\$ 16,555,142	\$	13,023,073
Other	101,302		335,386
Heising-Simons Foundation	1,470,583		2,004,594
W. M. Keck Foundation	-		129,049
Gordon and Betty Moore Foundation	-		77,204
Other	 3,203		101,034
Total advances	\$ 18,130,230	\$	15,670,340

### **Contributions**

Contributions are recorded in the period received. CARA reports gifts as restricted support if they are received with donor-imposed stipulations that limit the use of the donated assets. When a donor restriction expires, that is, when a stipulated time restriction ends or purpose restriction is accomplished, temporarily restricted net assets are reclassified to unrestricted net assets and reported in the statements of activities as net assets released from restrictions.

As described in note 1, CARA leases the Observatory and related facilities and improvements from Caltech for \$1 per year. As the use of the Observatory is so specific that there is no assignable value, it is impractical to determine a fair rental value to be reported as contribution revenue in the accompanying statements of activities.

#### Use of Estimates

The preparation of the financial statements in accordance with GAAP requires management of CARA to make a number of estimates and assumptions relating to the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant items subject to such estimates and assumptions include the carrying amount of property and equipment and the valuation of receivables and investments. Actual results could differ from those estimates.

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Schedule of Findings and Questioned Costs

Year Ended September 30, 2017

#### Long-Lived Assets

Long-lived assets, such as property and equipment, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If circumstances require a long-lived asset be tested for possible impairment, CARA first compares undiscounted cash flows expected to be generated by an asset to the carrying value of the asset. If the carrying value of the long-lived asset is not recoverable on an undiscounted cash flow basis, an impairment is recognized to the extent that the carrying value exceeds its fair value. Fair value is determined through various valuation techniques, including discounted cash flow models, quoted market values, and third-party independent appraisals, as necessary.

#### Sponsored Programs, Grants, and Contracts

Governmental and private grants and contracts normally provide for the recovery of direct and indirect costs, subject to audit. CARA recognizes revenues associated with direct costs as incurred. Indirect costs recovered on federally sponsored programs are based on cost reimbursement rates negotiated with CARA's cognizant agency, the National Aeronautics and Space Administration (NASA). Indirect costs recovered on all other grants and contracts are based on rates negotiated with the respective parties.

#### Subsequent Events

CARA has evaluated subsequent events from the balance sheet date through February 16, 2018 the date at which the financial statements were available to be issued. There are no other matters to disclose.

#### (3) Fair Value Measurements

The fair value of CARA's investments have been estimated using the net asset value per share as a practical expedient, and in accordance with Accounting Standards Codification Subtopic 820-10, *Fair Value Measurement and Disclosures*, are not required to be presented in a fair value hierarchy. There have been no changes in the methodologies used at September 30, 2017 and 2016.

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Schedule of Findings and Questioned Costs

Year Ended September 30, 2017

The following table summarizes CARA's investments for which fair value is measured using the net asset value per share practical expedient as of September 30, 2017 and 2016:

	Fair Value as of September:		Redemption	Redemption			
		2017	_	2016	Frequency	Notice Period	
Cash and cash equivalents:							
University of California Short-Term Investment Pool	\$	8.863.094	\$	11.635.844	Daily	Trade date	
Long-term investments:	φ	8,805,094	φ	11,035,844	Daily		
University of California							
General Endowment Pool		12,342,389		7,190,938	Monthly	30 days	
	\$	21,205,483	\$	18,826,782			

The following is a description of CARA's investments:

UC STIP – is a highly liquid investment fund held by UC. Shares of the UC STIP are purchased and redeemed at a constant value of \$1 per share.

*UC GEP* – it is a unitized fund whereby CARA participates in investment returns and income on an equivalent pro-rated basis with all participants in the pool. The UC GEP consists of the following investments at September 30, 2017: 23.1% U.S. equity securities, 17.9% absolute return funds, 16.5% international equity securities, 10.8% private equity funds, 9.0% U.S. fixed income securities, 8.7% cash, 5.2% emerging market securities, 4.4% U.S. real estate funds, 2.4% international fixed income securities, and 2.0% real asset funds. Under CARA's investment agreements with UC, investments in the UC GEP are redeemable at net asset value. The funds held in the UC GEP are not subject to an initial lockup period, however, fund redemptions are limited to 5% per year unless additional redemptions are approved by the UC. As of September 30, 2017, the UC GEP amounted to approximately \$11.0 billion, with unfunded commitments amounting to \$460.1 million.

Due to the nature of the investments held by the funds, changes in market conditions and the economic environment may significantly impact the net asset value of the fund and, consequently, the fair value of CARA's interests in the UC GEP.

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Schedule of Findings and Questioned Costs

Year Ended September 30, 2017

### (4) **Operating Revenues**

A summary of operating revenues for the years ended September 30, 2017 and 2016 follows:

	2017	2016
University of California - observatory operations (note 1)	\$ 11,142,331	\$ 11,694,637
National Aeronautics and Space Administration	3,905,508	3,923,028
Heising-Simons Foundation	1,234,012	464,268
National Science Foundation	1,220,679	307,410
W. M. Keck Foundation	129,049	162,018
Association for Universities for Research in Astronomy	100,000	10,405
Gordon and Betty Moore Foundation	77,204	-
Other	3,222,882	3,172,139
Total operating revenues	\$ 21,031,665	\$ 19,733,905

### (5) **Property and Equipment**

A summary of property and equipment at September 30, 2017 and 2016 follows:

	2017	2016	
Observatory instrumentation and adaptive optics: Property and equipment Construction in progress	\$ 113,771,399 4,830,734	\$ 100,786,161 13,192,936	
	118,602,133	113,979,097	
Observatory infrastructure: Property and equipment	4,700,611	4,466,132	
Vehicles and equipment	5,081,780	5,265,866	
Less accumulated depreciation	128,384,524 (80,443,716)	123,711,095 (73,838,380)	
Total property and equipment, net	\$ 47,940,808	\$ 49,872,715	

Depreciation expense amounted to \$7,124,534 and \$6,350,096 for the years ended September 30, 2017 and 2016, respectively.

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Schedule of Findings and Questioned Costs

Year Ended September 30, 2017

In 2016, CARA replaced the dye laser in the Keck 2 telescope with an upgraded solid state laser, resulting in a net loss on disposal of \$802,478 for the year ended September 30, 2016.

### (6) Income Taxes

CARA has received a determination from taxing authorities that it is an organization exempt from taxation under Section 501(c)(3) of the U.S. Internal Revenue Code and Section 23701d of the California Revenue and Taxation Code and is generally not subject to federal or state income taxes. However, CARA is subject to income taxes on any net income derived from a trade or business, regularly carried on, and not in furtherance of the purposes for which it was granted exemption. No income tax provision has been recorded as the net income, if any from any unrelated trade or business, in the opinion of management, is not material to the financial statements taken as a whole.

CARA applies the provisions of ASC Topic 740, *Income Taxes*, which prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return, and provides guidance on derecognition, classification, interest, and penalties, disclosure, and transition. Management believes that no such uncertain tax position exists for CARA requiring accrual or disclosure at September 30, 2017 and 2016. CARA is no longer subject to U.S. federal income tax examinations by tax authorities for years before 2014.

#### (7) **Related-Party Transactions**

Caltech and UC provide various instrument and adaptive optics development services to CARA. During fiscal years 2017 and 2016, total expenditures for these services charged to CARA were \$535,629 and \$601,662, respectively, by Caltech, and \$1,332,718 and \$215,369, respectively, by UC.

CARA provided services for projects on Caltech's observatory assets located in Hawaii including: ongoing repair of the telescope mirror segments, telescope control system upgrades, dome shutter improvements, installation of two photo-voltaic systems on Caltech's Waimea headquarters buildings, a fiber interface, and ongoing installation of a spare secondary mirror. During fiscal years 2017 and 2016, total expenditures for these projects was \$3,116,292 and \$3,122,348, respectively.

CARA provided services for projects as a subawardee to UC including development of a tertiary mirror and development of a spectrograph. During fiscal year 2017, total expenditures for these projects was \$395,792.

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Schedule of Findings and Questioned Costs

Year Ended September 30, 2017

### (8) Commitments

CARA entered into various contractual agreements for operations, laser guide star and adaptive optics systems, observatory construction and development of instrumentation and interferometry systems. A summary of commitments at September 30, 2017 follows:

Operations	\$ 1,902,412
Instrumentation	1,341,343
Laser guide star and adaptive optics systems	182,341
Total commitments	\$ 3,426,096

#### (9) Board-Designated Net Assets

CARA established a board-designated Director's Fund separate from its unrestricted, undesignated net assets to be spent at the Observatory Director's discretion, except that there is a ceiling of \$100,000 for each activity unless Board approval is obtained. The Director will report annually to the Board on the use of this fund. In 2017 and 2016, CARA received contributions of \$195,384 and \$125,563, respectively, which were board-designated for the Director's Fund. At September 30, 2017 and 2016, respectively, the board-designated net assets amounted to \$804,560 and \$698,323.

#### (10) Temporarily Restricted Net Assets

In 2017 and 2016, CARA received restricted contributions for various instrumentation and adaptive optics technology development and Development Office initiatives totaling \$978,045 and \$609,587, respectively. In 2017 and 2016, \$991,799 and \$511,100, respectively, of temporarily restricted net assets were released from restriction in satisfaction of equipment acquisition and program restrictions. At September 30, 2017 and 2016, \$573,307 and \$587,061, respectively, was available for these activities.

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Schedule of Findings and Questioned Costs

Year Ended September 30, 2017

### (11) Deferred Compensation

#### 403(b)Plan

CARA sponsors a defined contribution retirement plan (the Plan), which was established under Section 403(b) of the U.S. Internal Revenue Code. The Plan provides for CARA to make contributions at various percentages of base salary depending on the participant's age and grade. Eligible employees, as defined in the Plan, may make contributions not to exceed amounts allowable under the U.S. Internal Revenue Code. Contributions to the Plan amounted to \$921,578 and \$922,291 for fiscal years 2017 and 2016, respectively.

### 457(b) Plan

In 2014, CARA established a voluntary deferred compensation plan for a specific group of management designed in accordance with the provisions of Section 457 of the Internal Revenue Code. The plan allows participants to defer a portion of their compensation until after employment termination. Assets in the plan are held by CARA on a non-trust basis and are subject to the claims of its creditors. The plan is funded entirely from the compensation of the participants and vests with the employee immediately. CARA makes no contributions to the plan. The 457(b) plan assets and related liability obligation to participants of \$298,802 and \$208,219 as of September 30, 2017 and September 30, 2016, respectively, are included within other assets and accounts payable and accrued expenses in the accompanying statements of financial position.