Federal Awards Supplemental Information June 30, 2023

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Report on Schedule of Expenditures of Federal Awards Required by the Uniform Guidance

Independent Auditor's Report

To the Board of Trustees Michigan Technological University

We have audited the financial statements of Michigan Technological University (the "University"), a component unit of the State of Michigan, as of and for the year ended June 30, 2023 and the related notes to the financial statements, which collectively comprise the University's basic financial statements. We issued our report thereon dated October 5, 2023, which contained an unmodified opinion on the financial statements. Our audit was conducted for the purpose of forming an opinion on the financial statements that collectively comprise the basic financial statements. We have not performed any procedures with respect to the audited financial statements subsequent to October 5, 2023.

The accompanying schedule of expenditures of federal awards is presented for the purpose of additional analysis, as required by the Uniform Guidance, and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements themselves, and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the financial statements as a whole.

Plante i Moran, PLLC

March 13, 2024





Report on Internal Control Over Financial Reporting and on Compliance and Other Matters Based on an Audit of Financial Statements Performed in Accordance with *Government Auditing Standards*

Independent Auditor's Report

To Management and the Board of Trustees Michigan Technological University

We have audited, 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, the financial statements of Michigan Technological University (the "University") as of and for the year ended June 30, 2023 and the related notes to the financial statements, which collectively comprise the University's basic financial statements, and have issued our report thereon dated October 5, 2023. The financial statements of Michigan Tech Fund, a blended component unit, were not audited in accordance with *Government Auditing Standards*.

Report on Internal Control Over Financial Reporting

In planning and performing our audit of the financial statements, we considered the University's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the University's internal control. Accordingly, we do not express an opinion on the effectiveness of the University's internal control.

A deficiency in internal control exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A material weakness is a deficiency, or a combination of deficiencies, in internal control such that there is a reasonable possibility that a material misstatement of the University's financial statements will not be prevented, or detected and corrected, on a timely basis. A significant deficiency is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses or significant deficiencies may exist that were not identified.

Report on Compliance and Other Matters

As part of obtaining reasonable assurance about whether the University's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and, accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.



To Management and the Board of Trustees Michigan Technological University

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the University's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the University's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

Alante i Moran, PLLC

October 5, 2023



Report on Compliance for Each Major Federal Program and Report on Internal Control Over Compliance Required by the Uniform Guidance

Independent Auditor's Report

To the Board of Trustees Michigan Technological University

Report on Compliance for Each Major Federal Program

Opinion on Each Major Federal Program

We have audited Michigan Technological University's (the "University"), a component unit of the State of Michigan, compliance with the types of compliance requirements identified as subject to audit in the U.S. Office of Management and Budget (OMB) *Compliance Supplement* that could have a direct and material effect on the University's major federal program for the year ended June 30, 2023. The University's major federal program is identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs.

In our opinion, the University complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on the major federal program for the year ended June 30, 2023.

Basis for Opinion on Each Major Federal Program

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America (GAAS); the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (the "Uniform Guidance"). Our responsibilities under those standards and the Uniform Guidance are further described in the *Auditor's Responsibilities for the Audit of Compliance* section of our report.

We are required to be independent of the University and to meet our other ethical responsibilities in accordance with relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on compliance for each major federal program. Our audit does not provide a legal determination of the University's compliance with the compliance requirements referred to above.

Responsibilities of Management for Compliance

Management is responsible for compliance with the requirements referred to above and for the design, implementation, and maintenance of effective internal control over compliance with the requirements of laws, statutes, regulations, rules, and provisions of contracts or grant agreements applicable to the University's federal program.



Auditor's Responsibilities for the Audit of Compliance

Our objectives are to obtain reasonable assurance about whether material noncompliance with the compliance requirements referred to above occurred, whether due to fraud or error, and express an opinion on the University's compliance based on our audit. Reasonable assurance is a high level of assurance but is not absolute assurance and, therefore, is not a guarantee that an audit conducted in accordance with GAAS, *Government Auditing Standards*, and the Uniform Guidance will always detect material noncompliance when it exists. The risk of not detecting material noncompliance resulting from fraud is higher than for that resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Noncompliance with the compliance requirements referred to above is considered material if there is a substantial likelihood that, individually or in the aggregate, it would influence the judgment made by a reasonable user of the report on compliance about the University's compliance with the requirements of each major federal program as a whole.

In performing an audit in accordance with GAAS, *Government Auditing Standards*, and the Uniform Guidance, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material noncompliance, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the University's compliance with the compliance requirements referred to above and performing such other procedures as we considered necessary in the circumstances.
- Obtain an understanding of the University's internal control over compliance relevant to the audit in order to
 design audit procedures that are appropriate in the circumstances and to test and report on internal control
 over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion
 on the effectiveness of the University's internal control over compliance. Accordingly, no such opinion is
 expressed.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and any significant deficiencies and material weaknesses in internal control over compliance that we identified during the audit.

Report on Internal Control Over Compliance

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. A material weakness in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A significant deficiency in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. A significant deficiency in internal control over compliance is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the *Auditor's Responsibilities for the Audit of Compliance* section above and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies in internal control over compliance. Given these limitations, during our audit we did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses, as defined above. However, material weaknesses or significant deficiencies in internal control over compliance that we consider to over compliance may exist that were not identified.

Our audit was not designed for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, no such opinion is expressed.

To the Board of Trustees Michigan Technological University

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

Alante 1 Moran, PLLC

March 13, 2024

Schedule of Expenditures of Federal Awards

	Direct/Pass-	Assistance	Grant ID / Pass-through Entity	Total Amount Provided		
Federal Agency/Pass-through Agency/Program Title	through	Listing Number	Identifying Number		ederal Expenditures	
	tilough	Elating Number	Identifying Humber		Sucrai Experiatores	
Student Financial Assistance Cluster						
Department of Education						
Federal Supplemental Educational Opportunity Grant Federal Work-Study Program	Direct Direct	84.007 84.033	P007A222046 P033A222046	\$-\$	243,577 325,420	
Federal Pell Grant Program	Direct	84.063	P063P220234	-	4,944,840	
Federal Perkins Loan Program	Direct	84.038	N/A		4,077,300	
Federal Direct Student Loans	Direct	84.268	P268K230234		24,490,551	
Total Student Financial Assistance Cluster				-	34,081,688	
Research and Development Cluster						
U.S. Department of Agriculture						
Agriculture and Food Research Initiative (AFRI)	Direct	10.310	2023-67022-39754		20,453	
Agriculture and Food Research Initiative (AFRI)	Direct	10.310	2017-67013-26261	-	60,188	
Agriculture and Food Research Initiative (AFRI)	Direct	10.310	2020-67023-31638	-	158,807	
Agriculture and Food Research Initiative (AFRI)	Direct	10.310	2022-67014-37035	-	184,997	
Passed through the Pennslyvania State University:						
Agriculture and Food Research Initiative (AFRI) Passed through the Keweenaw Bay Ojibwa Community College:	Pass-through	10.310	S002482-USDA	-	3,283	
	B	40.007			0.000	
1994 Institutions Research Program Passed through the Worcester Polytechnic Institute:	Pass-through	10.227	2020-01-MTU	-	6,986	
International Agricultural Education Fellowship Program	Pass-through	10.619	11161-GR	-	94.323	
Cooperative Forestry Research	Direct	10.202	NI22MSCFRXXXG027	-	247,437	
Cooperative Forestry Research	Direct	10.202	NI23MSCFRXXXG004	-	178,282	
Cooperative Forestry Research	Direct	10.202	NI21MSCFRXXXG022		44,109	
Subtotal U.S. Department of Agriculture				-	998,865	
U.S. Department of Agriculture - Forest Service						
Continuing KISMA priority invasive species control						
and outreach with partners and community	Direct	10.RD	22-PA-11090700-003		17.366	
Applied Carbon Research and Management	Direct	10.RD	20-CR11242306-109	-	17,300	
Estimating Upland Watersheds Risk to Increased Sediment. Ash	Direct	10.110	20-0111242300-103	-	17,009	
and Nutrients Due to Wildfires in the Continental US	Direct	10.RD	20-JV-11221634-214		19.127	
	Direct	10.KD	20-37-11221034-214	-	19,127	
Long-term Effects of Hurricane Hugo and Prescribed Fire Management						
on Sustainability of Coastal Plain Forests	Direct	10.RD	21-JV-11330180-051	-	5,758	
Analysis support and expert knowledge for scaling aggregated, object-based						
estimations of fuels, energy flux, and emissions	Direct	10.RD	21-CR-111221633-152	-	60,451	
Forest management strategies in a changing world	Direct	10.RD	22-JV-11242307-069	-	6,809	
Advancement of the Riparian Buffer Delineation Model and Its Utility Across a Variety of Ecosystems	Direct	10.RD	18-CS-11132422-306	_	5.293	
Using UAS Based LiDAR to Map Archaeology Features	Direct	10.RD	19-PA-11091000-012	-	6.518	
Demonstrate the Durability of Enhanced Domestic Hardwoods	Billoot	10.112	1017111001000012		-,	
for U.S. Army Tactical Trailer Decking	Direct	10.RD	19-JV-11111133-064	-	64,238	
Ottawa NF- Assessment of Stream Restoration to Inform Future						
Efforts to Maintain Coldwater Streams	Direct	10.RD	21-PA-11090700-002	-	(1,914	
Response of forest and peatland ecosystems to environmental change: new continuation	Direct	10.RD	22-JV-11242306-037		25 406	
Geospatial Monitoring for Effective Peatland Management in Central Africa	Direct	10.RD	22-3V-11242306-037 23-JV-11132762-079		25,938	
WFEIS-FuelRX Collaboration	Direct	10.RD	23-CR-11261925-033	-	9,886	
Passed through the Nevada System of Higher Education:						
FASMEE Science and Coordination	Pass-through	10.RD	GR16556	-	15,813	
Cooperative Forestry Assistance	Direct	10.664	20-DG-11094200-008	-	24,549	
Cooperative Forestry Assistance	Direct	10.664	19-DG-11420000-032	-	(51	
Wood Utilization Assistance	Direct	10.674	23-DG-11094200-251	-	32,778	
Forest Health Protection	Direct	10.680	20-DG-11094200-241	-	57.568	
Forest Health Protection	Direct	10.680	21-DG-11094200-063	-	23,708	
International Forestry Programs	Direct	10.684	22-DG-11132762-346	_	86,979	
Partnership Agreements	Direct	10.699	17-JV-11242306-044	-	(2.177	
Partnership Agreements	Direct	10.699	20-CS-11242306-096	-	217.692	
	Direct	10.699	20-CS-11242306-096	-	1	
Partnership Agreements		10.699		-	92,120	
Partnership Agreements	Direct	10.699	19-CR-11242306-025	-	110,385	
Partnership Agreements	Direct		18-CR-11242306-072	-	88,977	
Partnership Agreements	Direct	10.699	22-CS-11242308-035		50,339	
Partnership Agreements	Direct	10.699	20-JV-11330180-087 21-JV11242307-050	-	22,463	
Partnership Agreements		10.699		-	46,777	
Partnership Agreements	Direct	10.699	21-JV-11242307-084	-	3,450	
Infrastructure Investment and Job Act Joint Fire					04.747	
Science Program (Research & Development)	Direct	10.714	22-JV-11242313-089		24,747	
Subtotal U.S. Department of Agriculture - Forest Service					1,158,862	
Total U.S. Department of Agriculture					2,157,727	
U.S. Department of Commerce - National Institute for Standards and Technology	Direct	11,000	7011411200111110			
Measurement and Engineering Research and Standards		11.609	70NANB22H113		86,305	
Science, Technology, Business and/or Education Outreach	Direct	11.620	70NANB21H037	68,897	78,419	
Subtotal U.S. Department of Commerce - National Institute for Standards						
and Technology				68,897	164,724	
U.S. Department of Commerce - National Oceanic and Atmospheric Administration						
Coastal Zone Management Estuarine Research Reserves	Direct	11.420	NA22NOS4200058	-	43,733	
Climate and Atmospheric Research	Direct	11.431	NA22OAR4310213	-	14,718	
				-		

Schedule of Expenditures of Federal Awards

Federal Agency/Pass-through Agency/Program Title	Direct/Pass- through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)			idonarying Hambon		
Passed through University of Michigan CIGLR					
SOAR Support	Pass-through	11.RD	ADVANCE ACCOUNT	\$ -	\$ 6,212
Passed through Mid-Atlantic Fishery Management Council					
2023 Fishery-independent bottom longline survey of the mid-Atlantic golden tilefish stock	Pass-through	11.RD	Agreement signed 10/31/2022		36,362
Passed through Great Lakes Observing System:	Fass-though	11.KD	Agreement signed 10/31/2022	-	30,302
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	IOOS098/YR3-NCCOS-01		18,275
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	IOOS098/HFR-02		68,784
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	Project No. IOOS098/YR3-NBN-21	-	22,869
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	IOOS001/YR1-NBN-02		12,571
Integrated Ocean Observing System (IOOS)	Pass-through	11.012	IOOS098/YR2-NBN-11		48,796
Passed through Michigan Department of Environment,					
Great Lakes, and Energy:					
Coastal Zone Management Administration Awards	Pass-through	11.419	Project #: 2022-309-Toolkit Te	-	41,563
Coastal Zone Management Administration Awards	Pass-through	11.419	PROJECT #: 2023-309-TECHNICAL	-	9,304
Passed through Board of Supervisors of Louisiana State University					
Gulf Coast Ecosystem Restoration Science Observation, Monitoring, and Technology	Pass-through	11.451	SUBAWARD NO. PO-0000038194		38,376
Passed through Ohio State University	Fass-though	11.451	308AWARD NO. P0-0000038154	-	30,370
Center for Sponsored Coastal Ocean Research_Coastal	Pass-through	11.478	PO#RF01495490/PROJECT		
Ocean Program	•		#60061695	-	3,631
Passed through Regents of the University of Michigan					
Ocean Exploration	Pass-through	11.011	SUBK00014120	-	70,180
Sea Grant Support	Pass-through	11.417	SUBK00012244	-	29,820
Sea Grant Support	Pass-through	11.417	SUBK00012245	-	28,457
Sea Grant Support National Oceanic and Atmospheric Administration (NOAA)	Pass-through	11.417	SUBK00016477	-	86,378
Cooperative Institutes	Pass-through	11.432	SUBK00015596 PO# 3006671074		37,432
National Oceanic and Atmospheric Administration (NOAA)	i doo tii ougri	11.102			57,452
Cooperative Institutes	Pass-through	11.432	SUBAWARD NO. SUBK00015597		205,815
National Oceanic and Atmospheric Administration (NOAA)					
Cooperative Institutes	Pass-through	11.432	Subcontract No. SUBK00011367		91,758
National Oceanic and Atmospheric Administration (NOAA)					
Cooperative Institutes	Pass-through	11.432	SUBK00017717	-	4,674
National Oceanic and Atmospheric Administration (NOAA)	Dana through	44,422	SUDK00047650		
Cooperative Institutes National Oceanic and Atmospheric Administration (NOAA)	Pass-through	11.432	SUBK00017652	-	110,117
Cooperative Institutes	Pass-through	11.432	SUNK00017907		11,002
Passed through University of Wisconsin-Madison					11,002
National Oceanic and Atmospheric Administration (NOAA)					
Cooperative Institutes	Pass-through	11.432	846K333		17,549
Weather and Air Quality Research Subtotal U.S. Department of Commerce - National Oceanic and	Pass-through	11.459	0000001819		10,944
Atmospheric Administration					1,069,320
Total U.S. Department of Commerce				68,897	1,234,044
U.S. Department of Defense - U.S. Air Force					
Experiments, Scenarios, CONOPS, and Prototype Engineering (ESCAPE)	Direct	12.RD	FA8750-16-C-0072		71,210
Multi-Scale Fusion & Allocation for Heterogeneous Sensing (MSFAHS)	Direct	12.RD	FA8750-21-C-1003	-	444,506
Air Force Defense Research Sciences Program	Direct	12.800	FA9550-17-1-0201		14,168
Air Force Defense Research Sciences Program	Direct	12.800	FA9550-20-1-0434	-	110,088
Passed through Applied Research Solutions, Inc					
Fusion of Observation, Interence and Learning (FOIL)	Pass-through	12.RD	SUB CON NO. S00016/PO S00016		84,073
Passed through ARCTOS Technology Solutions, LLC Aerospace Propulsion Outreach: Electrical Power Generation	Pass-through	12.RD	ARCTOS Subcontract Agmt PO ID		12,746
Passed through Information Systems Laboratories	Fass-though	12.00	ANG TOS Subcontract Agritt PO ID		12,740
Cognitive Fully-Adaptive Radar (CoFAR) Scheduler	Pass-through	12.RD	Subcontract 10063; PO 2200011		140,040
Passed through Pennslyvania State University	•				,
Air Force Defense Research Sciences Program	Pass-through	12.800	Sub No. S001884-AFOSR		116,157
Passed through Karax LLC					
Degradation-induced Performance Loss in composites:					
Modeling damage accumulation through concurrent					
Environmental and Mechanical loads	Pass-through	12.RD	Research Agreement	-	30,069
Passed through Booz-Allen-Hamilton					
Research, Analysis and Development for Advanced Signal	Pass-through	10.00	C.4. #0002044DA11 D.5		100 67 -
Processing of a CDO Environment RAZOR	Pass-through Pass-through	12.RD 12.RD	Sub #S903841BAH; Prime #FA8075 IDIQ SubcontractA33024/P111850	-	409,684 151,490
Passed through Lincoln Labs MIT	r ass-uii dugii	12.00	15 Ng Guboonita (M03024/F 111030	-	151,490
MITLL Ice Experiments Field Support	Pass-through	12.RD	PO #7000570552		16,580
Passed through Endectra, LLC	•				,,
Multifunctional Integrated Cargo Pocket UAS Phase II	Pass-through	12.RD	MTU AGREEMENT #2005006		51,264

Schedule of Expenditures of Federal Awards

	Direct/Pass-	Assistance	Grant ID / Pass-through Entity	Total Amount Provided	
Federal Agency/Pass-through Agency/Program Title	through	Listing Number	Identifying Number	to Subrecipients	Federal Expenditu
earch and Development Cluster (Continued)					
Passed through Leidos Inc.	D	10.00			
PRIDE (Passive Radio Frequency Identification Environment)	Pass-through	12.RD	P010189654 / FA8650-16-C-1732	\$-	\$ 2,
Passed through Northrop Grumman PRECISE	Pass-through	12.RD	PO #5300003528		48.
Passed through MTRI Inc.	Fass-uirougii	12.00	PO#3300003328		40,
Sub-Wavelength All Motions Information (SWAMI)	Pass-through	12.RD	MTU Agreement #2206023		12
Passed through Research Associates of Syracuse, Inc	r doo an ough	12.110		-	12
Complex Emitter Behavioral Analysis Using Machine Learning	Pass-through	12.RD	MTU Agreement #2206019		33
Passed through Soar Technology, Inc.	r doo an ough	12.110	interrigiocitiona #2200010	-	00
Rapid Data and Sensor Fusion for Collaborative Automated Target Acquisition	Pass-through	12.RD	PO-0000181;FA86512- ID 10535		31
Passed through Utah State University Research Foundation					0
Auris: A Cubesat to Characterize and Locate Geostationary					
Communications Emitters	Pass-through	12.RD	CP0053711	-	13
Auris nanosatellite development Phase B	Pass-through	12.RD	CP0072013		18
Subtotal U.S. Department of Defense - U.S. Air Force	Ū				1,97
S. Department of Defense - U.S. Army	Divid	10.101			
Basic Scientific Research	Direct	12.431	W911NF-22-2-0066	-	4
Robotic Platform Soil and Terrain Chracterization for Close to Real Time GO/NOGO Maps	Direct	12.RD 12.RD	W9132T21C0016	-	8
Development of a Diesel Electric Hybrid HMMWV Demonstration Platform with Power Sharing	Direct	12.RD 12.RD	W50RAJ2290011 W912CG-21-C-0016	780,289	1,72
OPFOR Hierarchical AI for Field Exercises and Training MPVs Product Improvements	Direct	12.RD 12.RD	W912CG-21-C-0016 W56HZV-19-C-0053 WD09	-	32
	Direct	12.RD 12.RD	W56HZV-19-C-0053 WD 016	-	
Defense Mobility System	Direct	12.RD	W56HZV-19-C-0053 WD 016 W56HZV-19-C-0053	11,734	1
MAPS Integration		12.RD 12.RD		-	69
CASSINO	Direct Direct	12.RD	W56HZV-19-C-0053 WD 018 W56HZV-19-C-0053 WD 023	-	36
Sensors for Adaptive Armor EHP Roller Technical Manual	Direct	12.RD	W56HZV-19-C-0053 WD 025	206,557	21
		12.RD			6
M1E1 Track Loads Phase 4 ONR PAM	Direct	12.RD	W56HZV-19-C-0053 WD 027 W56HZV-19-C-0053 WD 028	85,519	
Water Bison	Direct	12.RD	W56HZV-19-C-0053 WD 028	358,917	52
Robotic Live Fire Test Stand	Direct	12.RD	W56HZV-19-C-0053 WD 032 W56HZV-19-C-0053 WD 033	-	35
	Direct	12.RD	W56HZV-19-C-0053 WD 033	-	17
Wear Plate & Center Guide Testing Sensors for Adaptive Armor	Direct	12.RD	W56HZV-19-C-0053 WD 035	- 372,484	5
	Direct	12.RD	W56HZV-19-C-0053 WD 035 W56HZV-19-C-0053 WD 036	372,404	
Bevameter	Direct	12.RD	W56HZV-19-C-0053 WD 030	-	3
EHP Roller Software	Direct	12.RD	W56HZV-19-C-0053 WD 037 W56HZV-19-C-0053 WD 039	-	14 7
Stryker APU PDM HTV SUPPORT	Direct	12.RD	W56HZV-19-C-0053 WD 040	-	
EHP Roller PCB	Direct	12.RD	W56HZV-19-C-0053 WD 040	-	21 14
CRREL Winter Testing	Direct	12.RD	W56HZV-19-C-0053 WD 041 W56HZV-19-C-0053 WD 042	-	14
M172A2 25T STLB RAM TEST	Direct	12.RD	W56HZV-19-C-0053 WD 042	-	28
Camera Integration	Direct	12.RD	W56HZV-19-C-0053 WD 044	-	6
Multi-Threat Radar Installations & Characterization (MTRIC)	Direct	12.RD	W56HZV-19-C-0053 WD 044 W56HZV-19-C-0053 WD 045	-	3
Robotic Platform Soil and Terrain Chracterization for Close to Real Time GO/NOGO Maps	Direct	12.RD	W9132T21C0016	-	13
SAR Signature Management	Direct	12.RD	W912HZ23C0022	-	
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Passed through SOSSEC, Incorporated					
Modeling and Algorithm Development for Adaptive Adversarial	Pass-through	12.RD	ERDC-MECI-PLA-0003		13
Al for Complex Autonomy	Pass-unough	12.10	EKDC-MECI-PEA-0003	-	10
Passed through University of California at San Diego Deployment and Recovery of Experimental Buoy - 2022	Pass-through	12.RD	Univ Calif PUR00416739		
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DO 91, Detection and Classification Algorithm for UAV Radar DO 91, Detection and Classification Algorithm for UAV Radar	Pass-through Pass-through	12.RD 12.RD	Agreement No. 8237390801 AGREEMENT NO 821739018	-	27
	Pass-through	12.KD	AGREEMENT NO 821739018	-	8
Passed through Helios Remote Sensing Systems Soldier-borne Radar Detector - Phase II	Pass-through	12.RD	Subcontract No. 1335-S01-HRSSI		17
Passed through Great Lakes Sound & Vibration Inc	F ass-ullough	12.00	Subcontract No. 1353-501-11(551	-	17
GLSV Test Course October 2022	Pass-through	12.RD	Michigan Tech Test Course Lice		
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Passed through Stevens Institute of Technology ENTERPRISE: SERC Aural Signal Analytics Library	Pass-through	12.RD	2103140-01 Prime HQ003419D0003		
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ENTERPRISE: Robot Leader Follower Phase 2	Pass-through	12 RD	GRANT W15QKN-20-1-1000		
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Investigation of VR/AR/XR Technology Applied with Eye and Interaction	Pass-through	12.RD	Agreement # P0001/Grant W15QKN		
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Real-time Radio-Frequency Characterization of Unmanned Airborne Systems	Pass-through	12.RD	SUBCONTRACT AGMT 18F0117-MI	-	6
Passed through Globe Tech, LLC		12.RD	MTU CO #2212032P23-1 and Globe		
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Circut Board Repair, Inspection and Testing	Pass-through	12.110			
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Schedule of Expenditures of Federal Awards

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Passet through BAE Systems Asset through IVE BAE System Subcontract#1179564 48.6 Topology-Agracials Resource Management and Control (TARMAC) Passet shrough 12.RD MTU #2108080 - 50.0 Dasset through Moite Incorporated Topology-Agracials Resource Management and Control (TARMAC) Passet through 12.RD MTU #2108080 - 25.0 URBAN RECONNARSANCE THROUGH SUPERVISED AUTONOMY Passet through 12.RD SUBCONTRACT NUMBER: SC-20-030 - 25.0 U.S. Department of Defense - Artis, 12.RD SUBCONTRACT NUMBER: SC-20-030 - 25.0 Passet through American refunders Management and Agorithm Direct 12.RD HM157520P0058 - 12.9 Passet through American Foundry Society Inc - - 25.0 - 25.0 Passet through American Federal Systems, LLC Manafer Manafaduring Pass-through 12.RD MOMDE/FP-MTU-09142022 - 32.0 Passet through Sam Technology, Inc. Pass-through 12.RD SC-21-001-10458 - 16.6 R-L/CE PHII Pass-through 12.RD SC-21-001-10458		Page through	12 PD	Subcontract No. P010244078		460 110
ToadsbolPass-through12.RDBAE System Subcontract#1179564-49.6Passed through More IncorportedTopologyAgnosic Resource Management and Control (TARMAC)Pass-through12.RDMTU #2109080-55.0Passed through Soar Technology, Inc.URBAN RECONNAUSSANCE THROUGH SUPERVISED AUTONOMYPass-through12.RDSUBCONTRACT NUMBER: SC-20-030-28.0(RUSA) PROGRAM. PHASE 2Passethrough12.RDSUBCONTRACT NUMBER: SC-20-030-28.0Subcolal U.S. Department of Defense Advance Research Project12.RDSUBCONTRACT NUMBER: SC-20-030-28.0US. Department of DefenseAdvance Research Project12.RDHM157520P0058-12.9Passed through America Foundy Society IncDirect12.RDAFS: Prime #SP4701-17-D-1134-19.1Passed through NetGen Folders (Systems, LUC)Passethrough12.RDMOMBO-FFP-MTU-08142022-32.9Passed through NetGen Folders (Systems, LUC)Pass-through12.RDSC-21-001-10458-66.4Localization for Intelligent ManufacturingPass-through12.RDSC-21-001-10458-2.0Passed through LET Chology, Inc.Pass-through12.RDSC-21-001-10458-3.02.0Design and construction of alplot-science moder theologyPass-through12.RDMOMBO-FFP-MTU-08142022-3.0Design and construction of alplot-science moder theologyPass-through12.RDMOU SC-21-001-10458-2.0Design and construction of alplot-		Pass-triough	12.RD	Subcontract No. P010244078	-	462,118
Pasel trooph Moire incorporated Pase-through 12.RD MTU #2109080 - 56,0 Pased trooph Moire incorporated Subtoal US. Department of Defense - Defense Advance Research Project 12.RD SUBCONTRACT NUMBER: SC-20-030		Pass-through	12.RD	BAE System Subcontract#1179564		49,678
Pased through Sar Technology, Inc. URBAN RECONNAISSANCE THROUGH SUPERVISED AUTONOMY (RUSA) PROGRAM. PHASE 2 Pase-through 12.RD SUBCONTRACT NUMBER: SC-20-030 - 26.0 Subtoal U.S. Department of Defense - Defense Advance Research Project 479,172 4,542.9 U.S. Department of Defense - Defense Advance Research Project 479,172 4,542.9 Automated Batymetry Generation and Algorithm Direct 12.RD HM157520P0058 - 12,9 Pased through Nanrican Foundy Solety Inc Integration of ICME Tools in Casting Design and Process Optimization for Intelling Mundacturing Pase-through 12.RD AFS; Prime #SP4701-17-D-1134 - 19,1 Pased through Natrican Foundy Solety Inc Integration of ICME Tools in Casting Design and Process Optimization for Intelling Mundacturing Pase-through 12.RD MOMBO-FFP-MTU-09142022 - 32,9 Pased through Natrican Foundy Solety Inc Integration of CME Tools in Casting Design and Process Optimization for Bedgen Bedgen Space Research Project 400, 12.RD MOMBO-FFP-MTU-09142022 - 32,9 Pased through Natrican Foundy Solety Inc RL-ICE PHII Localization through Optimized Coordination of Umanned Sensor Teams for RADER (LCCUST-R) Pase-through 12.RD SOARTECH #PO-0000211; IDE10543 - 2 Pased through LIET Technology Design and construction of a plot-scale provder atomization system to support ICME design of high performance alloys for Isser-porder bef fusion Pase-through 12.RD MIU Agreement 2111034; PO #2022 - 30,11 Machining Samples Pase-through 12.RD MIU Agreement 2111034; PO #2022 - 30,11 Machining Samples Pase-through 12.RD MIU Agreement 2111034; PO #2022 - 30,11 Machining Samples Pase-through 12.RD SUBCONTRACT NO. ETE 2,011,01 - 44,9 Pased through Lieto, Inc: Highgarden Highgarde	Passed through Moire Incorporated					
URBAN RECONNISSANCE THROUGH SUPERVISED AUTONOMY (RUSA) PROGRAM - PHASE 2 Pass-through 12.RD SUBCONTRACT NUMBER: SC-20-430 - 28.0 Subtabul U.S. Department of Defense - Defense Advance Research Project - 28.0 479,172 4.542.9 US. Department of Defense - Passed through American Foundry Society Inc - 12.RD HM157520P0058 - 12.80 Passed through American Foundry Society Inc - 0.0 - 28.0 - 12.90 Passed through American Foundry Society Inc - - - - 28.0 Passed through NextGen Federal Systems, LLC - - - - - 28.0 Passed through NextGen Federal Systems, LLC - MOMBO-FFP-MTU-09142022 - 32.9 Passed through NextGen Federal Systems, LLC - <td< td=""><td>Topology-Agnostic Resource Management and Control (TARMAC)</td><td>Pass-through</td><td>12.RD</td><td>MTU #2109080</td><td>-</td><td>56,055</td></td<>	Topology-Agnostic Resource Management and Control (TARMAC)	Pass-through	12.RD	MTU #2109080	-	56,055
(RUSA) PROCRAM- PHASE 2 Pass-through 12 RD SUBCONTRACT NUMBER: SC-20-030 28.0 Subtolal U.S. Department of Defense - Defense Advance Research Project 479,172 47.04.72 4.52.9 U.S. Department of Defense 470,172 4.52.9 Automated Bathymetry Generation and Algorithm Direct 12.RD HM157520P0058 12.8D Passed through American Foundry Society Inc 2.0 2.0 Passed through NextGen Federal Systems, LLC 2.0 32.9 Passed through Sear Technology, Inc. 32.9 Passed through Optimized Coordination of Unmanned Sensor Teams 32.9 Inc.ICE PHI Expansion Pass-through 12.RD SC-21-001-10455 66,4 Localization through Optimized Coordination of Unmanned Sensor Teams						
Subtolal U.S. Department of Defense - Defense Advance Research Project 478,172 4,542.9 U.S. Department of Defense Automated Bathymetry Generation and Agorithm Direct 12.RD HM157520P0058 - 12.90 Passed through American Foundry Society Inc Integration Casting Design and Process - - 11.9 Optimization for Intelligent Manufacturing Pass-through 12.RD AFS; Prime #SP4701-17-D-1134 - 19.1 Passed through NexGen Foderal Systems, LLC - - 32.9 Passed through Could Defense - - 32.9 Passed through Optimization (MOMBO) Pass-through 12.RD SC-21-001-10458 - 65.4 Localization through Optimized Coordination of Urmanned Sensor Teams - - 76.4 66.1 for RADER (LOCUST-R) Pass-through 12.RD SOARTECH #PO-000211; ID#1643 - 2 Passed through Left Technology - - 10.4 10.4 Design and construction of a plot-scale powder atomization system to support ICME - - 30.1 Machining Samples Pass-through 12.RD MTU Agreement 2111034; PO #2022 - 30.1 Machining Samples Pass-through 12.RD MTU Agreement 2111034; PO #2022 -						26.014
U.S. Department of Defense Automated Battymetry Generation and Agorithm Direct 12.RD HM157520P0058 12.9.0 Passed through American Foundry Society Inc - - 12.9.0 Integration for Intelligent Manufacturing Pass-through 12.RD AFS; Prime #SP4701-17-D-1134 - 19.1 Passed through NextGen Federal Systems, LLC - - - 32.9 Passed through Soar Technology, Inc. -		Pass-through	12.RD	SUBCONTRACT NUMBER: SC-20-030		
Automated Bathymetry Generation and Algorithm Direct 12.RD HM157520P0058 - 12.9D Passed through American Foundry Sociely Inc - - - - - - - 12.9D Plassed through is for Intelligent Manufacturing Pass-through 12.RD AFS; Prime #SP4701-17-D-1134 - 19.1 Passed through NextGen Federal Systems, LLC -	Subtotal U.S. Department of Defense - Defense Advance Research Project				479,172	4,542,971
Automated Bathymetry Generation and Agorithm Direct 12.RD HM157520P0058 - 12.9D Passed through American Foundry Sociely Inc - - - - - - - 12.9D Inlegration of ICME Tooking and Process -	U.S. Department of Defense					
Integration of ICME Tools in Casting Design and ProcessAFS: Prime #SP4701-17-D-1134AFS:	•	Direct	12.RD	HM157520P0058		12,959
Optimization for Intelligent Manufacturing Pass-through 12.RD AFS; Prime #SP4701-17-D-1134 9 19,1 Passed through NextGen Federal Systems, LLC <	Passed through American Foundry Society Inc					
Passed through NextGen Federal Systems, LLC Mesosphere Observation Mission for Beacon Optimization (MOMBO) Pass-through 12.RD MOMBO-FFP-MTU-09142022 - 32.9 Passed through NextGen Federal Systems, LLC RL-CE PHI Pass-through 12.RD SC-21-001-10458 - 56.4 Localization through Optimization of Unmanned Sensor Teams - 76.4 - 66.1 RL-ICE PHII Pass-through 12.RD SC-21-009-10494 - 616.2 RL-ICE PHII Expansion Pass-through 12.RD SOARTECH #PO-0000211; ID#10543 - 20.2 Passed through left representation of a pilot-scale powder atomization system to support ICME - - 30.1 Machining Samples Pass-through 12.RD MTU Agreement 2111034;PO #2022 - 30.1 Machining Samples Pass-through 12.RD MTU SO 2211033;PO 2022-378;Pri - 13.4 Passed through Lefton through Exe - - - - 44.9 Pass-through 12.RD SUBCONTRACT NO. ETE:21.012.01 - - 44.9 Passet through Leidos, Inc.: - - - 249.5 - 44.9<	Integration of ICME Tools in Casting Design and Process					
Messosphere Observation Mission for Beacon Optimization (MOMBO) Pass-through 12.RD MOMBO-FFFP-MTU-09142022 - 32.9 Passed through Soar Technology, Inc. Image: Construction Mission for Denomination of Unmanned Sensor Teams Image: Construction of Unmanned Sen		Pass-through	12.RD	AFS; Prime #SP4701-17-D-1134		19,151
Passed through Soar Technology, Inc. RL-ICE PHII Pass-through 12.RD SC-21-001-10458 - 56,4 Locatization through Optimized Coordination of Unmanned Sensor Teams - - 166,1 - 166,1 RL-ICE PHII Pass-through 12.RD SC-21-001-10458 - 166,1 RL-ICE PHII Expansion Pass-through 12.RD SOARTECH #PO-0000211; ID#10543 - 22 Passed through LIP Technology - - - 30,1 Machining Samples Pass-through 12.RD MTU Agreement 2111034; PO #2022 - 30,1 Machining Samples Pass-through 12.RD MTU SO 2211033; PO 2022-378; Pri - 13,4 Passed through Letgen Technologies Ltd. - - - 13,4 Passed through Leidos, Inc.: - - - 14,9 - Passet through Leidos, Inc.: - - - - 44,9 - - 44,9 - - - 44,9 - - - 44,9 - - - - - - - - <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
RL-ICE PHIL Pass-through 12.RD SC-21-001-10458 - 56,4 Localization through Optimized Coordination of Unmanned Sensor Teams -	,	Pass-through	12.RD	MOMBO-FFP-MTU-09142022	-	32,973
Localization through Optimized Coordination of Unmanned Sensor Teams Pass-through 12.RD SC-21-09-10494 - 166.1 RL-ICE PHII Expansion Pass-through 12.RD SOARTECH #PO-0000211; ID#10543 - 12.62 Passed through LIFT Technology Design and construction of a pilot-scale powder tabmization system to support ICME - - - 30.1 Machining Samples Pass-through 12.RD MTU Agreement 2111034;PO #2022 - - - 30.1 Machining Samples Pass-through 12.RD MTU SO 2211033;PO 2022-378;Pri - - 13.4 Passed through Life tegent Technologies Ltd. - - - - - 14.9 Adjorithm Performance Evaluation with Low Sample Size Pass-through 12.RD SUBCONTRACT NO. ETE 21.012.01 - - 44.9 Passed through Lifes, Inc.: - - - - - 44.9 Passet trough Lifes, Inc.: - - - - - - - 44.9 - - - - - - - - - - - <t< td=""><td></td><td>Pass-through</td><td>12 RD</td><td>SC-21-001-10458</td><td></td><td>56,475</td></t<>		Pass-through	12 RD	SC-21-001-10458		56,475
for RADER (LOCUST-R) Pass-through 12.RD SC-21-009-10494 - 166,1 RL-ICE PHIL Expansion Pass-through 12.RD SOARTECH #PC-0000211; ID#10543 - 2 Passed through LIFT Technology - - 3 <td< td=""><td></td><td>1 ass-through</td><td>12.110</td><td>00-21-001-10400</td><td>-</td><td>30,473</td></td<>		1 ass-through	12.110	00-21-001-10400	-	30,473
Passed through LIFT Technology Design and construction of a pilot-scale powder atomization system to support ICME design of high performance alloys for laser-powder bed fusion Pass-through 12.RD MTU Agreement 2111034;PO #2022 30.1 Machining Samples Pass-through 12.RD MTU SO 2211033;PO 2022-378;Pri 413.4 Passed through LIFT Echnologies Ltd. - 13.4 Adjointim Performance Evaluation with Low Sample Size Pass-through 12.RD SUBCONTRACT NO. ETE 21.012.01 44.9 Passed through LIFT echnologies Ltd. - 44.9 Passet through Lift agree Evaluation with Low Sample Size Pass-through 12.RD Subcontract No. ETE 22.011.01 44.9 Passet through Lift agree Evaluation with Low Sample Size Pass-through 12.RD Leidos P010276396/Prime 22-C-8 24.95 Ridgeback TO2 Pass-through 12.RD P010276396/Prime 22-C-8317 24.93 24.95 Cardinal Pass-through 12.RD P010278508; Prime 22-C-8317 22.12 21.12 IVY Pass-through 12.RD P010278508; Prime 22-C-8317 22.12 21.12 IVY Pass-through 12.RD		Pass-through	12.RD	SC-21-009-10494		166,187
Design and construction of a plot-scale powder atomization system to support ICME 9 aps-through 12.RD MTU Agreement 2111034;PO #2022 - 30,1 Machining Samples Pass-through 12.RD MTU SO 2211033;PO 2022-378;Pri - 30,1 Passet through Elegent Technologies Ltd. Agorithm Performance Evaluation with Low Sample Size Pass-through 12.RD SUBCONTRACT NO. ETE-21.012.01 - 18.33 Synthetic Aperture Radar (SAR) Image Generation Data Augmentation (SIGDA) Pass-through 12.RD SUBCONTRACT NO. ETE-22.011.01 - 18.33 Passed through Leigent Rechnologies Ltd. - Subcontract No. ETE-22.011.01 - 18.33 Synthetic Aperture Radar (SAR) Image Generation Data Augmentation (SIGDA) Pass-through 12.RD Subcontract No. ETE-22.011.01 - 18.33 Passet dtrough Leidos, Inc: - Highgarden Pass-through 12.RD Pol010276396/Prime 22-C-8 - 249,55 Ridgeback TO2 Pass-through 12.RD P010276396/Prime 22-C-8317 - 241,95 VY Pass-through 12.RD P0102759506, Prime 22-C-8317 - 242,12 IVY Pass-through 12.RD P01			12.RD	SOARTECH #PO-0000211; ID#10543	-	250
design of high performance alloys for laser-powder bed fusion Pass-through 12.RD MTU Agreement 2111034;PO #2022 9 30,1 Machining Samples Pass-through 12.RD MTU Agreement 2111034;PO #2022 30,1 30,1 Passed through Etegen Technologies Ltd. Pass-through 12.RD MTU SO 2211033;PO 2022-378;Pri 4 31,4 Agorithm Performance Evaluation with Low Sample Size Pass-through 12.RD SUBCONTRACT NO. ETE 21.012.01 4 44,9 Synthetic Aperture Radar (SAR) Image Generation Data Augmentation (SIGDA) Pass-through 12.RD Subcontract No. ETE 22.011.01 44,9 Passed through Leidos, Inc.: 12.RD Leidos P010276396/Prime 22-C-8 44,9 Highgarden Pass-through 12.RD Leidos P010276396/Prime 22-C-8 48,3 Cardinal Pass-through 12.RD P010274823 48,3 Cardinal Pass-through 12.RD P010274828; PIME 21-C-2001 42,2 NY Pass-through 12.RD P01027485; PIME 21-C-2001 32,2 NY Pass-through 12.RD P0102276452	Passed through LIFT Technology					
Maching Samples Pass-through 12.RD MTU SO 2211033;PO 2022-378;Pri - 13,4 Passed through Edgent Torugh 12.RD SUBCONTRACT NO. ETE 21.012.01 - 13,4 Adjorithm Performance Evaluation with Low Sample Size Pass-through 12.RD SUBCONTRACT NO. ETE 21.012.01 - 14,3 Synthetic Aperture Radar (SAR) Image Generation Data Augmentation (SIGDA) Pass-through 12.RD Subcontract No. ETE 22.011.01 - 44,9 Passed through Leidos, Inc: - - - 44,9 Highgarden Pass-through 12.RD Leidos P010276396/Prime 22-C-8 - 249,5 Ridgeback TO2 Pass-through 12.RD P010278263 - 48,3 Cardinal Pass-through 12.RD P010278506; Prime 22-C-8317 - 221,2 NY Pass-through 12.RD P010257458; PIIME 21-C-02011 - 249,5 NY Pass-through 12.RD P010257458; PIIME 21-C-2011 - 241,2 NY Pass-through 12.RD P010257458; PIIME 21-C-2011 - <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Passed through Elegent Technologies Ltd. Algorithm Performance Evaluation with Low Sample Size Pass-through 12.RD SUBCONTRACT NO. ETE.21.012.01 - 18.3 Synthetic Aperture Radar (SAR) Image Generation Data Augmentation (SIGDA) Pass-through 12.RD Subcontract No. ETE.22.011.01 - 18.3 Passet through Leidos, Inc: - Highgarden Pass-through 12.RD Subcontract No. ETE.22.011.01 - 249.5 Ridgeback TO2 Pass-through 12.RD P010276396/Prime 22-C-8 - 249.5 Cardinal Pass-through 12.RD P010276383 - 48.3 Cardinal Pass-through 12.RD P010276458; PRIME 21-C-2011 - 221.2 IVY Pass-through 12.RD P010252648; PRIME 21-C-20011 - 324.1 SPARTA Pass-through 12.RD Subcontract No-P010276452 - 1269.4					-	30,196
Algorithm Performance Evaluation with Low Sample Size Pass-through 12.RD SUBCONTRACT NO. ETE.21.012.01 - 18.3 Synthetic Aperture Radar (SAR) Image Generation Data Augmentation (SIGDA) Pass-through 12.RD Subcontract No. ETE.22.011.01 - 18.3 Passed through Leidos, Inc:: - Highgarden 12.RD Leidos Po10276396/Prime 22-C-8 - 249.5 Ridgeback TO2 Pass-through 12.RD P010276386, Prime 22-C-8317 - 243.6 Cardinal Pass-through 12.RD P010275956, Prime 22-C-8317 - 2421.2 NY Pass-through 12.RD P0102276455, PRIME 21-C-2001 - 324.1 SPARTA Pass-through 12.RD Subcontract No:PO10276452 - 324.1		Pass-through	12.RD	MTU SO 2211033;PO 2022-378;Pri	-	13,461
Synthetic Aperture Radar (SAR) Image Generation Data Augmentation (SIGDA) Pass-through 12.RD Subcontract No. ETE.22.011.01 - 44,9 Passed through Leidos, Inc.: 44,9 Highgarden Pass-through 12.RD Leidos P010276396/Prime 22-C-8 249,5 Ridgeback TO2 Pass-through 12.RD P010278263 48,3 Cardinal Pass-through 12.RD P010278506, Prime 22-C-8317 48,3 NY Pass-through 12.RD P010278508, Prime 22-C-8317 221,2 NY Pass-through 12.RD P010257458, PRIME 21-C-2011 232,12 SPARTA Pass-through 12.RD Subcontract No-P010276452 324,12		Pase-through	12 PD	SUBCONTRACT NO ETE 21 012 01		19 200
Passed through Leidos, Inc.: Pass-through 12.RD Leidos P010276396/Prime 22-C-8 - 249,5 Highgarden Pass-through 12.RD PO10276383 - 48,3 Ridgeback TO2 Pass-through 12.RD PO10279506; Prime 22-C-8317 - 221,2 Cardinal Pass-through 12.RD P010259568; PRIME 21-C-2001 - 221,2 IVY Pass-through 12.RD P01025648; PRIME 21-C-2001 - 324,1 SPARTA Pass-through 12.RD Subcontract No.PO10276452 - 1,269,4		-			-	
Highgarden Pass-through 12.RD Leidos P010276396/Prime 22-C-8 - 249,5 Ridgeback TO2 Pass-through 12.RD P010278283 - 48,3 Cardinal Pass-through 12.RD P010279506; Prime 22-C-8317 - 221,2 VY Pass-through 12.RD P010257658; PRIME 21-C-2001 - 324,1 SPARTA Pass-through 12.RD Subcontract No:PO10276452 - 1269,4		, asa-unough	12.110	Captorna del rid. ETE.22.011.01	-	44,951
Ridgeback TO2 Pass-through 12.RD PO10278283 - 48,3 Cardinal Pass-through 12.RD P010278506; Prime 22-C-8317 - 221,2 IVY Pass-through 12.RD P010257656; Prime 22-C-8317 - 324,1 SPARTA Pass-through 12.RD P010257645; PRIME 21-C-2001 - 324,1		Pass-through	12.RD	Leidos P010276396/Prime 22-C-8	-	249,568
Cardinal Pass-through 12.RD P010279506; Prime 22-C-8317 - 221,2 IVY Pass-through 12.RD P010252458; PRIME 21-C-2001 - 324,1 SPARTA Pass-through 12.RD Subcontract No:PO10276452 - 1,269,4					-	48,331
SPARTA Pass-through 12.RD Subcontract No:PO10276452 - 1,269,4		Pass-through	12.RD	P010279506; Prime 22-C-8317		221,278
					-	324,119
		-			-	1,269,413
Impaler Pass-through 12.RD P010280109 - 313.2	Impaler	Pass-through	12.RD	P010280109	-	313,254

Schedule of Expenditures of Federal Awards

Federal Agency/Pass-through Agency/Program Title	Direct/Pass- through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)	though			to Subrecipients	Federal Experiditures
Passed through Signature Research Inc					
Algorithms for Look-Down Infrared Target Exploitation-Phase II	Pass-through	12.RD	PO#01-383-02S1	\$-	\$ 6
Information Theory Approaches for Machine Learning Algorithm Performance					
Assessment with Limited Testing Data	Pass-through	12.RD	PO#01-417-01S1 HM0476-21-C-003	-	247
SRI 6/5/23 Test Course Project	Pass-through	12.RD	MTU Test Course License	-	3,413
Passed through Stevens Institute of Technology: ENTERPRISE: 2019 AFRL 01 Cooling Aid for Maintainers					
in Protective Gear	Pass-through	12.RD	Subcontract #2102964-01	-	1,108
STUDENT DESIGN: Dry Combat Submersible Fatigue/Stress Management	Pass-through	12.RD	2103339-01/Prime HQ003419D0003	-	5,000
ENTERPRISE: Dry Combat Submersible Atmospheric Monitoring Conditioning,					
and Purification	Pass-through	12.RD	2102140-02 Prime HQ003419D0003	-	40
ENTERPRISE: Dry Combat Submersible Atmospheric Monitoring, Conditioning, and Purification Phase 2	Pass-through	12.RD	2103339-02/HQ003419D0003		
ENTERPRISE: Dry Combat Submersible Salinity Specific Configuration Phase 2	Pass-through	12.RD 12.RD	2103339-02/HQ003419D0003 2103339-04/HQ003419D0003		2,478 5,000
Student Design: USASOC 05 Body Mounted Sensors	Pass-through	12.RD	2103339-22/Prime HQ003419D0003	-	5,000
Student Design: USASOC 03 Drone Video to Cell Tower	Pass-through	12.RD	Subcontract # 2103339-21/Prime		4,714
Subtotal U.S. Department of Defense				-	2,847,881
U.S. Department of Defense - Defense Threat Reduction Passed through MTRI Inc.					
Heterogeneous O?W? Learning System (HOWLS)	Pass-through	12.RD	MTU#2106030		23,288
TARgeting Distributed Sensors for Situational Surveillance (TARDIS3)	Pass-through	12.RD	MTU Agreement #2209070		1,198
Subtotal U.S. Department of Defense - Defense Threat Reduction				-	24,486
U.S. Department of Defense - Missle Defense					
Passed through Applied Research in Acoustics LLC (ARiA) Phase II STTR: MDA20-T002 Non-Real-Time Hardware-Assistedon					
Computer-System Simulation	Pass-through	12.RD	MTU Agreement #2112046		212,996
Total U.S. Department of Defense	3			2,294,672	18,081,368
U.S. Department of Housing and Urban Development					
Healthy Homes Technical Studies Grants	Direct	14.906	MILTS0007-17 AMEND NO. 1	15,847 128,022	15,999 247,883
Healthy Homes Technical Studies Grants	Direct	14.906	MILTS0023-21		
Total U.S. Department of Housing and Urban Development				143,869	263,882
U.S. Department of Interior					
Passed through Keweenaw Bay Indian Community					
Study on Stream Temperature Controls at Menge Creek, Falls River, and Silver River Catchments	Pass-through	15.RD	Tier II Services Agreement		33,497
Assessment of risk from cumulative toxicity of chemical contaminants	-		-		
in Lake Superior fish to Keweenaw Bay Indian Community Passed through Navajo Technical University	Pass-through	15.RD	SERVICES AGREEMENT#2102002	-	99,371
Science and Technology Projects Related to Coal Mining and Reclamation	Pass-through	15.255	NTU-32351-21	-	9,945
Subtotal U.S. Department of Interior				-	142,813
U.S. Department of Interior - Bureau of Indian Affairs Tribal Climate Resilience	Direct	15.156	A19AC00030	-	(598)
Passed through Keweenaw Bay Indian Community					(,
Climate Resiliency Plan and amendment of the Integrated					
Resource Management Plan	Pass-through	15.RD	KBIC SERVICES AGRMNT #2101026	-	10,664
Methyl Mercury Source and Availability in the Torch Lake Watershed Subtotal U.S. Department of Interior - Bureau of Indian Affairs	Pass-through	15.RD	KBIC SERVICES AGMT FR #2001056		38,381 48,447
Subidal 6.6. Department of Interior - Bureau of Indian Analis					40,447
U.S. Department of Interior - Fish & Wildfire Service					
Cooperative Landscape Conservation	Direct	15.669	F20AC11140-00	-	45,647
Passed through Michigan Department of Natural Resources					47,865
Wildlife Restoration and Basic Hunter Education Subtotal U.S. Department of Interior - Fish & Wildfire Service	Pass-through	15.611	MOA_MTU_CKMR		93,512
Subloar 0.5. Department of interior - rish & wildlife Service					55,512
U.S. Department of Interior - U.S. Geological Survey					
U.S. Geological Survey_ Research and Data Collection	Direct	15.808	G21AC10141-00	-	128,624
U.S. Geological Survey_ Research and Data Collection	Direct	15.808	G21AC10745-00	20,000	134,426
U.S. Geological Survey_ Research and Data Collection National Cooperative Geologic Mapping Program	Direct	15.808 15.810	G18AC00365 G21AC10681-00	-	21,817 23,571
U.S. Geological Survey Research and Data Collection	Direct	15.808	G22AC00436-00	-	365,653
Passed through America View:	Diroct	10.000	0221/000/00/00	-	505,055
National Land Remote Sensing Education Outreach and Research	Pass-through	15.815	AV18-MI-01	-	21,366
Passed through Western Michigan University					
Earth Mapping Resources Initiative	Pass-through	15.073	Subaward No. 11469	-	582
U.S. Geological Survey_Research and Data Collection	Pass-through	15.808	SUBAWARD #10471		21,657
Subtotal U.S. Department of Interior - U.S. Geological Survey				20,000	717,696
U.S. Department of Interior - National Park Service					
Monitoring Genetic Health of Isle Royale Wolves	Direct	15.RD	MTU CO#1909093		16,960
Monitoring Genetic Health of Isle Royale Wolves	Direct	15.RD	MTU CO #1909093P3		18,449
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P16AC01398		14
ure nauulidi Park System	Direct	15.945	P IDAGU1398	-	(1,262)

Schedule of Expenditures of Federal Awards

Federal Agency/Pass-through Agency/Program Title	Direct/Pass- through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Cooperative Research and Training Programs – Resources of					
the National Park System	Direct	15.945	P18AC00178	\$-	\$ (798)
Cooperative Research and Training Programs – Resources of					
the National Park System	Direct	15.945	P19AC00286		52,846
Cooperative Research and Training Programs – Resources of	- · ·				
the National Park System	Direct	15.945	P20AC00377	-	29,733
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P21AC11836-00		80,940
Cooperative Research and Training Programs – Resources of	Direct	13.943	P21AC11030-00		60,940
the National Park System	Direct	15.945	P22AC00193-01	-	35,522
Passed through Grand Portage Band of Lake Superior Chippewa					
Long-term water quality conditions in sentinel streams at Isle Royale National Park					
and Grand Portage National Monument	Pass-through	15.RD	Confirming Order #2207015		10,126
Subtotal U.S. Department of Interior - National Park Service				·	242,516
Total U.S. Department of Interior				20,000	1,244,984
U.S. Department of Labor Occupational Safety and Health_Susan Harwood Training Grants	Direct	17.502	SH-37201-21-60-F-26	19,939	38,237
Occupational Salety and Health_Susan Harwood Haining Grants	Direct	17.502	311-37201-21-00-F-20		
U.S. Department of Transportation					
Passed through Genex Systems					
Real-Time Monitoring and Modeling of Scour - Phase II	Pass-through	20.RD	469-SBIRDOTPH2-20FH3-1		183,952
	-				
U.S. Department of Transportation - Federal Aviation					
Passed through Iowa State University					
Small Unmanned Aircraft System (sUAS) for Pavement Inspection	Pass-through	20.RD	Award # 023139B		33,754
U.S. Department of Transportation - Federal Highway					
Autonomous Winter Road Maintenance Decision Making Enabled					
by Boosting Existing Transportation Data Infrastructure with Deep					
and Reinforcement Learning	Direct	20.RD	693JJ320C000022		228,099
Passed through Michigan Dept of Transportation					
Metropolitan Transportation Planning and State and					
Non-Metropolitan Planning and Research	Pass-through	20.505	Contract No. 2019-0311 Auth Z3	-	211,713
Metropolitan Transportation Planning and State and	D	00.505	0		
Non-Metropolitan Planning and Research Metropolitan Transportation Planning and State and	Pass-through	20.505	Contract No. 2019-0311, Aut Z1	378	377
Non-Metropolitan Planning and Research	Pass-through	20.505	2019-0311, Z2/ JN 211062NI		88,778
Subtotal U.S. Department of Transportation - Federal Highway	r ass-triough	20.000	2013-0311, 22/ 314 21100214	378	528,967
outoar 0.0. Department of mansportation - redenaring iway				510	320,307
U.S. Department of Transportation - Federal Railroad					
Effect of In-Vehicle Auditory Alerts on Driver	Direct	20.RD	693JJ618C000027	23,390	28,905
Developing Safe and Efficient Driving and Routing Strategies at					
Railroad Grade Crossings Based on Highway-Railway Connectivity	Direct	20.RD	693JJ6-19-C-000022		99,572
An Integrated and Automated Decision Support System for Ground Hazard Risk Mitigation for					
Railway using Remote Sensing and Traditional Condition Monitoring Data	Direct	20.RD	693JJ631C000004	20,420	236,021
Wire Arc Additive Manufacturing (WAAM) for Weld Enhanced Cast Steel Coupler Knuckles	Direct	20.RD	Contract No. 693JJ622C00001	-	90,090
Expanding Summer Youth Programs in Rail through Virtual Learning					
and a National Campus Network	Direct	20.RD	693JJ621C000014	89,633	182,514
A Risk Informed Decision-making Framework for Coastal Railroad System					
Subjected to Storm Hazards and Sea Level Rise	Direct	20.RD	693JJ622C000006	4,117	89,970
Railroad Track Maintenance Life-Cycle Assessment (LCA) Development;					
Framework, Data, Tools, and Implications for Multi-Modal Transport Decisions Passed through American Short Line and Regional Railroad Association	Direct	20.RD	693JJ622C000005	35,127	134,441
Evaluation of Non-Traditional Methods of Reducing Emission					
in Short Line Railroad Operations	Pass-through	20.RD	MTU Agreement #2110003		78.594
Passed through Virginia Polytechnic Institute and State University	Pass-ullough	20.00	WITO Agreement #2110003	-	70,094
Multi-Site Simulation to Examine Driver Behavior Impact of Integrated Rail					
Crossing Violation Warning (RCVW) and In-Vehicle Auditory/Visual Alert (IVAA) System	Pass-through	20.RD	ADV ACCT		49,358
Subtotal U.S. Department of Transportation - Federal Railroad				172,687	989,465
U.S. Department of Transportation - National Highway Traffic Safety					
Passed through The American Center for Mobility					
Automatic Shut-Off Study on Vehicles Equipped with Keyless Start	Pass-through	20.RD	2022ACM000001		94,689
Passed through Regents of the University of Michigan	5				
Development of Test Methods for Vehicle Localization Systems	Pass-through	20.RD	SUBK00017584		38,240
Subtotal U.S. Department of Transportation - National Highway Traffic Safety					132,929
Total U.S. Department of Transportation				173,065	1,869,067
National Aeronautics and Space Administration					
Exploring CV19 Impacts on Great Lakes Water Quality	Direct	43.RD	80NSSC20P2097	-	59,766
Science	Direct	43.001	80NSSC17K0287	-	32,820
Science	Direct	43.001	80NSSC19M0107SUP#P00001	119,296	192,862
Science	Direct	43.001	80NSSC20K0983	-	91,861

Schedule of Expenditures of Federal Awards

	Direct/Pass-	Assistance	Grant ID / Pass-through Entity	Total Amount Provided	
Federal Agency/Pass-through Agency/Program Title	through	Listing Number	Identifying Number	to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Science	Direct	43.001	80NSSC20K1480	\$-	\$ 120,045
Science	Direct	43.001	80NNSC20M022	108,768	285,504
Science Science	Direct Direct	43.001	80NSSC20K1773	291,782	323,678
Science	Direct	43.001 43.001	80NSSC21K0174 80NSSC20K0679		24,368 23,087
Space Technology	Direct	43.012	NNX17AJ32G	1,942,070	2,531,157
Space Technology	Direct	43.012	80NSSC21K0769	157,753	754,381
Space Technology	Direct	43.012	80NSSC21K1699	-	43,935
Science	Direct	43.001	80NSSC21K1162		70,354
Science	Direct	43.001	NNX16AN09G	6,414	(34,939)
Science	Direct	43.001	80NSSC19M0108 SUPPLEMENT #P003		209,600
Science	Direct	43.001	80NSSC19K0771	-	152,779
Science	Direct	43.001	80NSSC22K1268	-	72,545
Science	Direct	43.001	80NSSC22K1716	-	43,334
Science	Direct	43.001	80NSSC22K0504	-	13,230
Science	Direct	43.001	80NSSC22K1871		38,097
Science	Direct	43.001	80NSSC22K1234		87,649
Science Science	Direct Direct	43.001 43.001	80NSSC22K1248 MOD 0001 80NSSC22K1665		91,497
Science				-	9,071
Science Passed through Arizona State University:	Direct	43.001	80NSSC23K0720	-	4,229
STUDENT DESIGN: Landing System for Uncertain Terrain	Pass-through	43.RD	NASA PRIME NNM16AA09C		(1)
STUDENT DESIGN: Calcular System for Ordertain Ferrain STUDENT DESIGN: Robotic Explorer for Hypothesized Surfaces	Pass-through	43.RD	NASA PRIME NNM16ZZ09C	-	(1)
Passed through Honeybee Robotics	3				(-)
RedWater: Extraction of Water from Mars' Ice Deposits	Pass-through	43.RD	Prime 80HQTR19C0017	-	9,389
Passed through Jet Propulsion Laboratory					
SMAPVEX21 Planning and Vegetation Sampling Supplement	Pass-through	43.RD	Subcontract No. 1662109		13,867
Passed through Grand Valley State University					
Science	Pass-through	43.001	Subaward No. 214005-MTU-01	-	29,439
Passed through Trans Astronautica Corporation					
NIAC Phase 2: Lunar Polar Mining Outpost	Pass-through	43.RD	CO #2001052		7,669
Passed through Purdue University					
Science	Pass-through	43.001	Subaward No. 12000414-017		71,146
Passed through University of Central Florida					
Exploration	Pass-through	43.003	GR102569	-	27,662
Passed through University of Maryland College Park:					
Science	Pass-through	43.001	53894-Z6044201	-	977
Passed through University Corporation for Atmospheric Research					
Science	Pass-through	43.001	SUBAWD002090/P2010817		56,009
Passed through Texas State University Office of Stem Engagement (OSTEM)	Pass-through	43.008	22008-83824-2		70,890
Passed through University of Michigan:	Fass-tillough	43.000	22000-03024-2		70,690
Office of Stem Engagement (OSTEM)	Pass-through	43.008	SUBK00015391 PO#3006462575		335
Office of Stem Engagement (OSTEM)	Pass-through	43.008	SUBK00011994		5,080
Passed through Cleveland State University	i ass-tilougii	40.000	005100011334		3,000
CSU Science Vessel Support	Pass-through	43.RD	MTUSO#2207026;CSUPO#1000179727	-	1,186
Passed through MTRI Inc.	•				,
Tool for Autonomous Terrain Exploration of Remote Spaces	Pass-through	43.RD	Agreement #2203011		48,111
Passed through Lunar Outpost					
Design and Implementation Tools for Lunar Surface Regolith Structure Construction	Pass-through	43.RD	SUB_MTU-LO_NASASTTRPHI	-	49,181
Passed through Colorado School of Mines					
Space Technology	Pass-through	43.012	Subaward No. 402157-5802		102,703
Total National Aeronautics and Space Administration				2,626,083	5,734,552
National Endowment for the Humanities					
Promotion of the Humanities_Office of Digital Humanities	Direct	45.169	HAA-271717-20	-	6,682
Passed through Wayne State University			0.1		34,578
Promotion of the Humanities_Division of Preservation and Access	Pass-through	45.149	Subaward No. WSU22120	·	
Total National Endowment for the Humanities				-	41,260
National Science Foundation					
National Science Foundation Intergovernmental Personnel Act Assignment for Jacqueline Huntoon					
- Year 1 of up to 4 Total Years	Direct	47.RD	2233713		299,747
Engineering Grants	Direct	47.041	1639342	52,414	141,333
Engineering Grants	Direct	47.041	1709991	-	9,278
Engineering Grants	Direct	47.041	1818906	-	(2,841)
Engineering Grants	Direct	47.041	1807552	-	2,945
Engineering Grants	Direct	47.041	1827364	23,589	53,939
Engineering Grants	Direct	47.041	1846795	-	70,970
Engineering Grants	Direct	47.041	1918585	-	4,207
Engineering Grants	Direct	47.041	1920013	-	77,569
Engineering Grants	Direct	47.041	2015919	-	41,225
Engineering Grants Engineering Grants	Direct	47.041 47.041	2025449 2024970	-	141,029
Engineering Grants	Direct	47.041 47.041	2024970 2105887	-	81,387 1,217
	Dirot	47.041	2100007	-	1,217

Schedule of Expenditures of Federal Awards

	Direct/Pass-	Assistance	Grant ID / Pass-through Entity	Total Amount Provided	
Federal Agency/Pass-through Agency/Program Title	through	Listing Number	Identifying Number		Federal Expenditures
Research and Development Cluster (Continued)	×	- <u> </u>	, .		<u> </u>
Engineering Grants	Direct	47.041	2050739	s - s	\$ 122,170
Engineering Grants	Direct	47.041	2119019		93,804
Engineering Grants	Direct	47.041	2129093		25,023
Engineering Grants	Direct	47.041	2143608		(1,340)
Engineering Grants	Direct	47.041	2138522		36,610
Engineering Grants	Direct	47.041	2138523		41,515
Engineering Grants	Direct	47.041	2220856		22,014
Engineering Grants	Direct	47.041	2224418		20,589
Engineering Grants	Direct	47.041	2239080		43,623
Engineering Grants	Direct	47.041	2212324		34,003
Engineering Grants	Direct	47.041	2301649		12,278
Engineering Grants	Direct	47.041	2301580		17,126
Mathematical and Physical Sciences	Direct	47.049	1933342		29,284
Mathematical and Physical Sciences	Direct	47.049	1818467		5,684
Mathematical and Physical Sciences	Direct	47.049	1808052		32,656
Mathematical and Physical Sciences	Direct	47.049	1904215		13,705
Mathematical and Physical Sciences	Direct	47.049	1914549		185,765
Mathematical and Physical Sciences	Direct	47.049	1954041		290,539
Mathematical and Physical Sciences	Direct	47.049	2001076		109,779
Mathematical and Physical Sciences	Direct	47.049	1944211	-	102,678
Mathematical and Physical Sciences	Direct	47.049	2012944	200,399	278,579
Mathematical and Physical Sciences	Direct	47.049	2108316		79,603
Mathematical and Physical Sciences	Direct	47.049	2117318	-	67,104
Mathematical and Physical Sciences	Direct	47.049	2118693		88,398
Mathematical and Physical Sciences	Direct	47.049	2111359		89,192
Mathematical and Physical Sciences	Direct	47.049	2203630	-	68,076
Mathematical and Physical Sciences	Direct	47.049	2209533	-	29,609
Geosciences	Direct	47.050	2130739	-	29,769
Geosciences	Direct	47.050	1754244	-	24,084
Geosciences	Direct	47.050	1806287	-	32,311
Geosciences	Direct	47.050	1828866	-	60,873
Geosciences	Direct	47.050	1914526		112,946
Geosciences	Direct	47.050	2019649	-	69,481
Geosciences	Direct	47.050	2021768		102,105
Geosciences	Direct	47.050	2133229	583,726	1,210,880
Geosciences	Direct	47.050	2136139		118,910
Geosciences	Direct	47.050	2113060		55,547
Geosciences	Direct	47.050	2217182		44,244
Geosciences	Direct	47.050	2221730		77,321
Geosciences	Direct	47.050	2218518		52,058
Geosciences	Direct	47.050	2220556		20,289
Geosciences	Direct	47.050	2232216		39,400
Geosciences	Direct	47.050	2235515		38,930
Geosciences	Direct	47.050	1639868		28,833
Computer and Information Science and Engineering	Direct	47.070	1750193	-	41,987
Computer and Information Science and Engineering	Direct	47.070	1823398		3,891
Computer and Information Science and Engineering	Direct	47.070	1829222		19,486
Computer and Information Science and Engineering	Direct	47.070	1938130		8,224
Computer and Information Science and Engineering	Direct	47.070	1909089		90,528
Computer and Information Science and Engineering	Direct	47.070	1901005		254,095
Computer and Information Science and Engineering	Direct	47.070	1928349		99,971
Computer and Information Science and Engineering	Direct	47.070	1909248		64,925
Computer and Information Science and Engineering	Direct	47.070	2105006		2,257
Computer and Information Science and Engineering	Direct	47.070	2106754		108,649
Computer and Information Science and Engineering	Direct	47.070	2133279	209,215	632,825
Computer and Information Science and Engineering	Direct	47.070	2210356	-	37,734
Computer and Information Science and Engineering	Direct	47.070	2153393		20,533
Computer and Information Science and Engineering	Direct	47.070	2211353		8,147
Computer and Information Science and Engineering	Direct	47.070	2221741		12,947
Computer and Information Science and Engineering	Direct	47.070	2153381		47,136
Computer and Information Science and Engineering	Direct	47.070	2151238		14,668
Computer and Information Science and Engineering	Direct	47.070	2225424		63,805
Computer and Information Science and Engineering	Direct	47.070	2245670		51,675
Biological Sciences	Direct	47.074	2011257	-	102,148
Biological Sciences	Direct	47.074	1737877	-	9,838
Biological Sciences	Direct	47.074	1754603	- 5,536	9,030 149,511
Biological Sciences	Direct	47.074	1941309	5,536	204,866
-	Direct	47.074	1939399		
Biological Sciences		47.074	2031076		167,676
			2031070	11,250	242,367
Biological Sciences	Direct		0141505		70 /70
Biological Sciences	Direct	47.074	2141535	-	78,473
Biological Sciences Biological Sciences	Direct Direct	47.074 47.074	2238540	-	24,161
Biological Sciences Biological Sciences Social, Behavioral, and Economic Sciences	Direct Direct Direct	47.074 47.074 47.075	2238540 1911453		24,161 2,104
Biological Sciences Biological Sciences	Direct Direct	47.074 47.074	2238540	-	24,161

Schedule of Expenditures of Federal Awards

	Direct/Pass-	Assistance	Grant ID / Pass-through Entity	Total Amount Provided	
Federal Agency/Pass-through Agency/Program Title	through	Listing Number	Identifying Number	to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)					
Social, Behavioral, and Economic Sciences	Direct	47.075	2122034		\$ 106,441
Social, Behavioral, and Economic Sciences	Direct	47.075	2121875	33,594	106,082
STEM Education (formerly Education and Human Resources) STEM Education (formerly Education and Human Resources)	Direct Direct	47.076	1546592 1742286	-	15,718
STEM Education (formerly Education and Human Resources) STEM Education (formerly Education and Human Resources)	Direct	47.076 47.076	1742286 1758392	- 19,009	92,755 363,931
STEM Education (formerly Education and Human Resources)	Direct	47.076	2043022	19,009	655,764
STEM Education (formerly Education and Human Resources)	Direct	47.076	2043022	-	118,810
STEM Education (formerly Education and Human Resources)	Direct	47.076	1720566		74,709
STEM Education (formerly Education and Human Resources)	Direct	47.076	1760585		186,958
STEM Education (formerly Education and Human Resources)	Direct	47.076	1935932		41,741
STEM Education (formerly Education and Human Resources)	Direct	47.076	1954908		100,528
STEM Education (formerly Education and Human Resources)	Direct	47.076	2142309	-	127,531
Office of International Science and Engineering	Direct	47.079	1855690	-	162,822
Office of International Science and Engineering	Direct	47.079	2103105	-	46,067
Office of International Science and Engineering	Direct	47.079	2311700	-	36,181
Integrative Activities	Direct	47.083	1934346	35,145	169,812
Integrative Activities	Direct	47.083	2215734	-	432,111
NSF Technology, Innovation, and Partnerships	Direct	47.084	2236064		44,814
NSF Technology, Innovation, and Partnerships	Direct	47.084	2234450	-	19,465
Passed through Aren Incorporated					
Automating Element-Level Inspection of Civil Infrastructures through Computer Vision	Pass-through	47.RD	MTU Agreement #2211036	-	3,721
Passed through Stabilux Biosciences Inc.					
Engineering Grants	Pass-through	47.041	MICHIGAN TECH AGMT #1702043	-	47,758
Engineering Grants	Pass-through	47.041	MTU Agreement 2005024	-	13,692
Passed through University of Michigan					
Engineering Grants	Pass-through	47.041	SUBK00012982	-	39,675
Engineering Grants	Pass-through	47.041	UofM Subaward SUBK00015030	-	4,817
Passed through ZiTechnologies, Inc.					
Engineering Grants	Pass-through	47.041	RSCH #2008057 NSF AWRD#2052302	-	37,020
Passed through Pennsylvania State University					
Geosciences	Pass-through	47.050	S000075-NSF	-	12,305
Passed through Utah State University Sponsored Programs					
Geosciences	Pass-through	47.050	202743-811	-	80,546
Passed through University of Toledo					
Computer and Information Science and Engineering	Pass-through	47.070	F-2022-4	-	9,084
Passed through Baylor University		47.074	11001070 01		
Biological Sciences	Pass-through	47.074	#1001076-01	-	14,112
Passed through Colorado State University	Deep through	47.074	0 45444 00		14.007
Biological Sciences	Pass-through	47.074	G-45144-02	-	14,607
Biological Sciences	Pass-through	47.074	SUBAWARD #G-96772-1	-	76,656
Passed through Kansas State University Biological Sciences		47.074	040000		74.000
Passed through North Carolina A & T State University	Pass-through	47.074	S19023	-	74,908
Biological Sciences	Pass-through	47.074	260359B		00.054
Passed through Florida International University	Pass-through	47.074	200359B	-	92,251
STEM Education (formerly Education and Human Resources)	Pass-through	47.076	800010570-01UG		5,830
Passed through Northern Virginia Community College	Fass-through	47.070	800010370-01003	-	5,630
STEM Education (formerly Education and Human Resources)	Pass-through	47.076	Subaward No. 2112-SPL-002		14,147
Passed through Purdue University	Fass-through	47.070	Subawaru No. 2112-SF E-002	-	14,147
STEM Education (formerly Education and Human Resources)	Pass-through	47.076	Subaward No. 10001687-004		3,779
Passed through San Diego State University Research Foundation	rass-tillough	47.070	Subaward No. 10001087-004	-	3,779
STEM Education (formerly Education and Human Resources)	Pass-through	47.076	SA0000699		169,373
Passed through University of Virginia	1 ass-through	41.010	040000033	-	109,373
STEM Education (formerly Education and Human Resources)	Pass-through	47.076	GA11384.PO#2213323/PTE 1850296		49,924
Passed through University of Nebraska - Lincoln	r doo through	11.010		-	43,324
STEM Education (formerly Education and Human Resources)	Pass-through	47.076	25-0536-0045-006		(4,000)
Passed through University of Florida					(1,000)
STEM Education (formerly Education and Human Resources)	Pass-through	47.076	SUB00003153		26,730
NSF Technology, Innovation, and Partnerships	Pass-through	47.084	SUB00003604		17,879
Total National Science Foundation				1.175.252	11,476,004
				1,110,202	11,470,004
Environmental Protection Agency					
Innovative Water Technology Grant Program	Direct	66.521	84046901		84,948
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U.S. Department of Energy					
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0018942		44,677
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0020053	-	142,483
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0021168	26,339	229,460
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0022095	92,237	171,031
Office of Science Financial Assistance Program	Direct	81.049	DE-SC0022128	-	223,153
University Coal Research	Direct	81.057	DE-FE0032071	316	113,057
University Coal Research	Direct	81.057	DE-FE0032236		15,527
Conservation Research and Development	Direct	81.086	DE-EE0008685	-	(20,804)
Conservation Research and Development	Direct	81.086	DE-EE0008800		581,845
Conservation Research and Development	Direct	81.086	DE-EE0009122	76,012	123,266
Conservation Research and Development	Direct	81.086	DE-EE0009209	625,966	785,820

Schedule of Expenditures of Federal Awards

	Direct/Dec	Assistant	Crant ID / Page through Earth	Total Amount Description	
Federal Agency/Pass-through Agency/Program Title	Direct/Pass- through	Assistance Listing Number	Grant ID / Pass-through Entity Identifying Number	Total Amount Provided to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)	unough	Lioting Humbon	laonalying Hambol		Todordi Exponditaroo
Advanced Research Projects Agency - Energy	Direct	81.135	DE-AR0000788	s -	\$ 483,346
Advanced Research Projects Agency - Energy	Direct	81.135	DE-AR0001126	69,250	166,311
Advanced Research Projects Agency - Energy	Direct	81.135	DE-AR0001336 MOD 0001	-	115,656
Advanced Research Projects Agency - Energy	Direct	81.135	DE-AR0001702	6,120	129,759
Passed through Argonne National Laboratory:				-,	
Alternative Fuels Research with Argonne National Laboratory	Pass-through	81.RD	9F-60098		106,066
Investigation to Separate Lithium-ion Battery Active Cathode Materials by	5				,
Chemistry Using Froth Flotation	Pass-through	81.RD	Subcontract No. 9F-60080		218,834
Pengfei Xue Joint Appointment Argonne National Labs	Pass-through	81.RD	Pengfei Xue Joint Appointment		80,195
COMPASS GLM	Pass-through	81.RD	1F-60486		295,853
FY2020 Interoperability and Grid Integration Support	Pass-through	81.RD	OF-60090		35,358
Passed through National Renewable Energy Laboratory	5				
A Compression Ignition Mono-Fueled NG High-Efficiency, High-Output Engine					
for Medium and Heavy Duty Applications	Pass-through	81.RD	NHQ-9-82305-06		168,995
Passed through Battelle Memorial Institute	•				
Reduced Cost and Complexity for Off-Highway Aftertreatment	Pass-through	81.RD	Contract No. 554645		230,711
Passed through Battelle Energy Alliance, LLC	·				
Solvent Targeted Recovery and Precipitation (STRAP) For Plastic Removal					
form Municipal Solid Waste (MSW)	Pass-through	81.RD	271754 AMEND NO.4		169,136
Passed through General Motors LLC	r ass-arrough	01.10	27 HOT AWEND NO.4	-	109,130
Low Mass and High Efficiency Engine for Medium-Duty Truck Applications	Pass-through	81.RD	PO#4301052432		39,458
Passed through Honeywell Federal Manufacturing & Technologies, LLC:	r ass anough	01.10	1 011001002102	-	53,400
Full Field Dynamic Response For Simulation	Pass-through	81.RD	PO#N000416796	-	18,968
Simulation Methods for Optimal Fixture Design and Prediction	Pass-through	81.RD	Purchase Order N000469903/Mod.	-	56,155
Passed through QuesTek Innovations LLC	i ass-uirough	01.00	, aronase order 14000405503/MOD.	-	50,155
Melt Spinning	Pass-through	81.RD	MTU SO #2110046; PO# 2878		14
Melt Spinning	Pass-through	81.RD	MTU SO 2302070		6,148
	Fass-tillough	01.KD	MT0 30 2302070		0,140
Passed through Lawrence Livermore National Security LLC					
Theoretical Support for Gas-Gun Experiments: Towards Suppression	D	04 BB	Out out the Decision		
of Shockwave Instabilities and Jetting	Pass-through	81.RD	Subcontract No. B651358		88,937
Theoretical Support for Gas-Gun Experiments: Towards Suppression					
of Shockwave Instabilities and Jetting	Pass-through	81.RD	Subcontract No. B656313	-	48,541
Passed through Mesa Photonics LLC					
Cloud chamber characterization of an airborne cloud droplet imaging system	Pass-through	81.RD	MTU #2110021		57,320
Passed through UT-Battelle, LLC					
Control of Li Surfaces for Solid-State Batteries	Pass-through	81.RD	Subcontract No. CW34152	-	35,267
Integrated Control of Vehicle Speeds and Traffic Signals					
for Reducing Congestion and Energy Use Project Support	Pass-through	81.RD	CW37455	-	88,218
Passed through Sandia National Laboratories:					
Wind Turbine and Wind Farm Controls Code Evaluation for Reduced Order Models	Pass-through	81.RD	PO #2159403		1
Meta-Stability of Pulsed Loaded Microgrids	Pass-through	81.RD	PO #2169602		175,717
Technical Support and Maintenance of the Meteorological Instrument					
at the Michigan Regional Test Center for Solar Technologies	Pass-through	81.RD	PO 2348229		22,957
Enhancing the Efficiency and Resilience of PV Systems at Northern Latitudes	Pass-through	81.RD	2324302		62,044
Installation of Experimental Systems at the MI RTC	Pass-through	81.RD	Purchase Order No. 2324301		36,480
Power Electronics and Advanced Modeling and Control for Energy Systems	Pass-through	81.RD	Purchase Order No. 2460746		64,393
Passed through University of Wisconsin-Madison	·				01,000
Great Lakes Bioenergy Research Center	Pass-through	81.RD	000002956		81,844
Office of Science Financial Assistance Program	Pass-through	81.049	AGREEMENT NUMBER 812K943		157,749
Passed through RiKarbon, Inc.	i doo dirodgii	01.010	A STREEMENT HOMBER OF EROTO	-	101,140
	Pass-through	81.049	Prime DE-SC0020939		15,068
Office of Science Financial Assistance Program Passed through Regents of the University of Minnnesota	Pass-through	61.049	Pline DE-SC0020939	-	15,068
	Deer these of	81.049	SUBAWARD NO. H007829703		
Office of Science Financial Assistance Program Passed through University of Maryland College Park	Pass-through	01.049	SUDAWARD NO. HUU/829/03	-	54,440
	D	84.040	117007 77150001		
Office of Science Financial Assistance Program	Pass-through	81.049	117387-Z7159201		47,118
Passed through University of California, Los Angles					
Office of Science Financial Assistance Program	Pass-through	81.049	0190 G LA568	-	36,902
Passed through The American Center for Mobility					
Conservation Research and Development	Pass-through	81.086	SUBAWARD NO: DE-EE0008407-01	-	580,974
Passed through Texas A&M University					
Conservation Research and Development	Pass-through	81.086	M2300703		30,948
Passed through Clemson University					
Renewable Energy Research and Development	Pass-through	81.087	Sub #2184-219-2023054	-	6,772
Passed through Gas Technology Institute	-				
Renewable Energy Research and Development	Pass-through	81.087	GTI Agre #S948; Project #22530	-	13,698
Renewable Energy Research and Development	Pass-through	81.087	Agreement No.SR109/Prime DE-EE		31,609
Passed through REMADE Institue					. ,,
Renewable Energy Research and Development	Pass-through	81.087	SUBAWARD NO. 20-01-SA-4014	8,926	167,998
Passed through Michigan State University	. doo anodyn	2	22	0,926	107,998
Energy Efficiency and Renewable Energy Information Dissemination,					
Outreach, Training and Technical Analysis/Assistance	Pass-through	81.117	SUBAWARD NO. RC112846 - MTU	-	26,415
Total U.S. Department of Energy	. ass-anodyn	0	WIU	905,166	6,661,888
Total C.C. Boparanon of Enorgy				300,100	0,001,000
U.S. Department of Health and Human Services - Centers for Disease Control					
Temporal and Spatial Characterization of Respirable Coal Mine Dust Using Area					
Monitoring Devices and X-Ray CT	Direct	93.RD	75D30119C05527	73,226	73,896

Schedule of Expenditures of Federal Awards

	Direct/Pass-	Assistance	Grant ID / Pass-through Entity	Total Amount Provided	
Federal Agency/Pass-through Agency/Program Title	through	Listing Number	Identifying Number	to Subrecipients	Federal Expenditures
Research and Development Cluster (Continued)	District		7500000000075		
Mine Health and Safety Big Data Analysis and Text Mining by Machine Learning Algorithms Size-dependent Metric Analysis of Respirable Coal Mine Dust (RCMD)	Direct	93.RD 93.RD	75D30121C12375 75D30122C14732	\$ 75,172	\$ 127,558 34,246
Epidemiology and Laboratory Capacity for Infectious Diseases (ELC)	Direct	93.323	AGREEMENT #: E20224555-00	14,665	34,246 1,387,499
Passed through Center for Construction Research and Training					
Occupational Safety and Health Program	Pass-through	93.262	MTU Agreement #2111015		29,491
Subtotal U.S. Department of Health and Human Services - Centers for Disease Control				163,063	1,652,690
U.S. Department of Health and Human Services - National Institutes of Health					
Food and Drug Administration Research	Direct	93.103	1R01FD007461-01	171,718	369,553
Discovery and Applied Research for Technological Innovations to Improve Human Health	Direct	93.286 93.286	1R15EB026197-01 R01EB029570-01A0	-	72,528
Discovery and Applied Research for Technological Innovations to Improve Human Health Cancer Detection and Diagnosis Research	Direct	93.394	1R15CA242401-01	76,359	301,327 43,314
Cancer Treatment Research	Direct	93.395	1R15CA246336-01		75,331
Cardiovascular Diseases Research	Direct	93.837	1R15HL140596-01	24,804	24,804
Cardiovascular Diseases Research	Direct	93.837	1R15HL145654-01	-	548
Cardiovascular Diseases Research	Direct	93.837	1R01HL144739-01A1		73,791
Cardiovascular Diseases Research	Direct	93.837	1R15HL145655-01		102,162
Cardiovascular Diseases Research	Direct	93.837	1R15HL150703-01A1	-	228,851
Cardiovascular Diseases Research	Direct	93.837	1R01HL163159-01	-	223,135
Cardiovascular Diseases Research	Direct	93.837	1R15HL159602-01A1	-	28,973
Cardiovascular Diseases Research Diabetes, Digestive, and Kidney Diseases Extramural Research	Direct Direct	93.837 93.847	1R15HL167221-01 1R15DK134992-01	-	125,887
Extramural Research Programs in the Neurosciences and Neurological Disorders	Direct	93.853	1R15NS115032-01A1		60,340 317,141
Allergy and Infectious Diseases Research	Direct	93.855	1R21AI150962-01	22,002	73,311
Allergy and Infectious Diseases Research	Direct	93.855	1R21AI175913-01	-	3,707
Biomedical Research and Research Training	Direct	93.859	1R15GM137145-01		135,884
Biomedical Research and Research Training	Direct	93.859	1R15GM114751-02		(21,711)
Biomedical Research and Research Training	Direct	93.859	1R15GM135806-01		53,565
Biomedical Research and Research Training	Direct	93.859	1R15GM135875-01		132,798
Biomedical Research and Research Training	Direct	93.859	1R15GM132873-01A1	21,951	135,090
Biomedical Research and Research Training	Direct	93.859	1R15GM137298	21,289	73,902
Biomedical Research and Research Training	Direct	93.859	1R15GM139118-01A1	5,729	154,771
Biomedical Research and Research Training	Direct	93.859	1R15GM146206-01		176,543
Biomedical Research and Research Training	Direct	93.859	1R15GM148964-01	-	45,660
Biomedical Research and Research Training	Direct	93.859	2R15GM135806-02	-	14,680
Aging Research Passed through Regents of the University of Michigan	Direct	93.866	1R15AG059095-01	4,077	98,033
Research and Training in Complementary and Integrative Health	Pass-through	93.213	SUBK00013369 PO# 3006735267		4,292
National Center on Sleep Disorders Research	Pass-through	93.233	SUBK00003964 PO#3005929257		4,292
Passed through Oregon Health & Science University	-				
Cardiovascular Diseases Research	Pass-through	93.837	1022559_MTU	-	7,124
Passed through University of Wisconsin-Madison Child Health and Human Development Extramural Research	Pass-through	93.865	Subaward No. 000000663		2,152
Passed through Tulane University					
Aging Research	Pass-through	93.866	TUL-HSC-559015-21/22	-	9,710
Aging Research Passed through Hemex Medical	Pass-through	93.866	Sub Awrd #TUL-HSC-560960-22/23		14,085
Portable, affordable, quantitative microchip electrophoresis for hemoglobin A1C testing	Pass-through	93.RD	MTU Agreement #2112050		83,313
Subtotal U.S. Department of Health and Human Services - National Institute of Heath				347,929	3,252,019
Total U.S. Department of Health and Human Services				510,992	4,904,709
Total Research and Development Cluster				7,937,935	53,792,670
TRIO					
U.S. Department of Education TRIO McNair Post-Baccalaureate Achievement	Direct	84.217	P217A220192		131,234
Total Clusters				7,937,935	88,005,592
Other Federal Awards					
U.S. Department of Agriculture					
Passed through Michigan Department of Education					
Child and Adult Care Food Program	Pass-through	10.558			13,973
U.S. Department of Agriculture - Forest Service					
Archaeological Collection Cooperative Management Ottawa National Forest	Direct	10.U01	18-CS-11090700-004		2,952
Web Development for the Climate Change Resource Center	Direct	10.U02	18-CR-11242306-085	-	80,517
					32,497 15,475
					115,228
Belowground Ecosystem Ecologist	Direct	10.U06	21-JV-11242306-039		93,941
Archaeological Collection Cooperative Management - Hiawatha National Forest	Direct	10.U07	22-CS-11091000-013		10,309
USDA Northern Forest Climate Hub Coordination	Direct	10.U08	22-CR-11242306-036	-	54,188
Increasing Forest Service Capacity for Climate-Informed Project Development	Direct	10.U09	22-CS-11242306-049	-	2,369
Partnership Agreements	Direct	10.699	18-CR-11242306-049	-	8,548
Partnership Agreements	Direct	10.699	22-CS-11242306-076	-	66,084
Research Joint Venture and Cost Reimbursable Agreements	Direct	10.707	19-CR-11242306-094	-	46,766
				-	46,070 31,052
	Direct	10.707	21-01-11242300-007		605,996
					619,969
Digital Science Communication Supporting Science-Management Partnerships for Climate Adaptation Forest Service Research Web Modernization - Content Delivery Belowground Ecosystem Ecologist Archaeological Collection Cooperative Management - Hiawatha National Forest USDA Northern Forest Climate Hub Coordination Increasing Forest Service Capacity for Climate-Informed Project Development Partnership Agreements	Direct Direct Direct Direct Direct Direct Direct Direct	10.U03 10.U04 10.U05 10.U06 10.U07 10.U08 10.U09 10.699 10.699	19-CR-11242306-118 20-CR-11242306-088 20-CR-11242306-094 21-JV-11242306-039 22-CS-11091000-013 22-CR-11242306-036 22-CS-11242306-049 18-CCR-11242306-049 22-CS-11242306-049		

Schedule of Expenditures of Federal Awards

	Direct/Pass-	Assistance	Grant ID / Pass-through Entity	Total Amount Provided	
Federal Agency/Pass-through Agency/Program Title	through	Listing Number	Identifying Number	to Subrecipients	Federal Expenditures
ther Federal Awards (Continued)					
U.S. Department of Commerce - National Oceanic and Atmospheric Administration	Direct	11.429	NA21NOS4290004	s -	¢
Marine Sanctuary Program Marine Sanctuary Program	Direct	11.429	NA21NOS4290004 NA22NOS4290002	s -	\$ 55,659 35,233
Passed through Regents of the University of Michigan	Direct	11.425	112211004230002	-	55,255
National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	Pass-through	11.432	SUBK00015336		184
Total U.S. Department of Commerce				-	91,076
U.S. Department of Defense - National Security Agency	Direct	12 903	H98230-21-1-0116		168.245
GenCyber Grants Program GenCyber Grants Program	Direct	12.903	H98230-22-1-0110	-	48,945
Subtotal U.S. Department of Defense - National Security Agency				-	217,190
U.S. Department of Defense - U.S. Army					
Delivery of a Professional Development Course in Vehichle Chassis Systems,					
Fracture Mechanics and Corrosion	Direct	12.U01	2206037		24,975
Total U.S. Department of Defense				-	242,165
U.S. Department of Interior - National Park Service					
Report on Collected Historic Building Fragments for Keweenaw National Historical Park	Direct	15.U01	ORDER NO. 140P6421P0052	-	88
AIS outreach and portable boat wash support for KISMA Cooperative Research and Training Programs – Resources of the National Park System	Direct Direct	15.U02 15.945	Confirming Order #2205003 P20AC00379	-	10,872 533
Cooperative Research and Training Programs – Resources of the National Park System	Direct	15.945	P18AC00331	-	28,912
Subtotal U.S. Department of Interior - National Park Service				-	40,405
U.S. Department of Interior - Fish and Wildlife Service					
Great Lakes Restoration	Direct	15.662	F20AC10756-00	·	1
Total U.S. Department of Interior				-	40,406
U.S. Department of Labor Mine Health and Safety Grants	Direct	17.600	MS-38903-22-55-R-26	-	264,168
	Direct	17.000	10-30303-22-33-11-20		
U.S. Department of Transportation Intergovernmental Personnel Act Agreement with Michigan Tech University	Direct	20.U04	ASSIGNMENT AGRMT - 7/22/21		5,705
Intergovernmental Personnel Act Agreement with Michigan Technological University	Direct	20.004	AGGIONNIENT AGRANT - M22/21		5,705
on behalf of Dr. Amlan Mukherjee	Direct	20.U05	Assignment Agreement - dated 7	-	69,951
Subotal U.S. Department of Transportation				-	75,656
U.S. Department of Transportation - Federal Highway Administration					
Passed through Michigan Department of Transportation					
Roadsoft Support for MDOT Safety Services	Pass-through	20.U02	Contract # 2019-0449	-	837
Michigan Tech Summer Youth Programs - National Summer Transportation Institute 2023	Pass-through	20.U03	Contract No. 2023-0381	-	301
Highway Planning and Construction Highway Planning and Construction	Pass-through Pass-through	20.205 20.205	2021-0058 Authorization Z9 2023-0036, Authorization Z1	-	439,570 441,870
Highway Planning and Construction	Pass-through	20.205	2021-0058, Authorization Z16		55,583
Highway Planning and Construction	Pass-through	20.205	2021-0058, Authorization Z12		34,099
Highway Training and Education	Pass-through	20.215	2018-0713, Authoriz Z10-Z13		222,467
Highway Training and Education	Pass-through	20.215	2022-0997, AUTHORIATIONS Z1-4		486,350
Subotal U.S. Department of Transportation - Federal Highway Administration				-	1,681,077
U.S. Department of Transportation - Federal Railroad Administration					
Railroad Crossing Vehicle Warning (RCVW) Application Demonstrations					
with Connected Vehicles	Direct	20.U01	963JJ621C000023	51,721	214,527
Total U.S. Department of Transportation				51,721	1,971,260
National Aeronautics and Space Administration					
Science Passed through University of Michigan	Direct	43.001	80NSSC17M0076/SUPPL#004	-	177,260
Structural Characteristics of the Keweenaw and Hancock Faults in the Midcontinent					
Rift System and Possible Relationship to the Greenville Mountain Belt	Pass-through	43.U01	SUNK00017416	-	5,000
Office of Stem Engagement (OSTEM)	Pass-through	43.008	SUBK00015391 PO#3006462575		3,973 22,935
Office of Stem Engagement (OSTEM) Office of Stem Engagement (OSTEM)	Pass-through Pass-through	43.008 43.008	SUBK00017416 SUBK00011994	-	18,851
Passed through Copper Country Intermediate School District	-				
Office of Stem Engagement (OSTEM) Total National Aeronautics and Space Administration	Pass-through	43.008	A2031.OTH:TASK ORDR 2102039-10		1,525
National Endowment for the Arts					
Passed through Michigan Council for Arts and Cultural Affairs	Dava through				24.000
Promotion of the Arts_Partnership Agreements	Pass-through	45.025	Control Number: 23PS6144		24,000
National Endowment for Humanities					
Promotion of the Humanities_Office of Digital Humanities	Direct	45.169	HAA-271717-20	-	53,227
Passed through Michigan Humanities Council From the Rink to the Repository: Celebrating 100 Years of Michigan Tech Hockey	Pass-through	45.U01	MI Humanities Cou/MTU #2003042	-	5,585
Promotion of the Humanities Federal/State Partnership	Pass-through	45.129	Bridge23-009	-	1,500
Passed through Teagle Foundation	-				
Promotion of the Humanities Teaching and Learning Resources and Curriculum Development	Pass-through	45.162	Subaward #2005503	-	25,000
and Curnculum Development Total National Endowment for Humanities	r ass-tritough	40.102	Subawaru #2005505		85,312
, otal reasonal Endowment for Frankfilles				-	00,312

Schedule of Expenditures of Federal Awards

	Direct/Pass-	Assistance	Grant ID / Pass-through Entity	Total Amount Provided	
Federal Agency/Pass-through Agency/Program Title	through	Listing Number	Identifying Number	to Subrecipients	Federal Expenditures
Other Federal Awards (Continued)					
Small Business Administration					
Passed through Grand Valley State University					
Small Business Development Centers	Pass-through	59.037	MISBDC-2021-01 P.O. P0093600	\$ -	\$ 42,889
Small Business Development Centers	Pass-through	59.037	MISBDC-2022-1	· · · · ·	419,853
Total Small Business Association				-	462,742
U.S. Environmental Protection Agency					
Environmental Finance Center Grants	Direct	66.203	00E01979	-	54,173
Passed through University of New Mexico					
Surveys, Studies, Investigations, Demonstrations, and Training					
Grants - Section 1442 of the Safe Drinking Water Act	Pass-through	66.424	Subaward No. 281131 - 8737	-	94,726
Surveys, Studies, Investigations, Demonstrations, and Training Grants and					
Cooperative Agreements - Section 104(b)(3) of the Clean Water Act	Pass-through	66.436	Subaward No. 281132-8737	·	63,376
Total Environmental Protection Agency				-	212,275
U.S. Department of Energy					
Passed through Sandia National Laboratories					
Creation of a Northern-Climate Photovoltaic Test Site	Pass-through	81.U01	PO 2203470		20,400
U.S. Department of Education					
Passed through BHK Child Development Board BHK Great Explorations After School STEM Clubs	Pass-through	84.U01	MTU SO 2208033		9.888
Passed through UPWARD Talen Council	Fass-though	04.001	1010 30 2200033		9,000
Upper Peninsula Michigan Works Contractual Training for MiLEAP Project	Pass-through	84.U02	MTU MiLEAP Contract Document		25.679
Passed through Michigan Department of Education	Fass-through	84.002	WITO MILEAP Contract Document	-	25,679
Michigan GEAR UP	Pass-through	84.U03	Grant No. 23-00-07. Year 3		56.513
Gaining Early Awareness and Readiness for Undergraduate Programs	Pass-through	84.334	Grant No. 21-00-07, Year 2		36,888
Total U.S. Department of Education	5	04.004	Glait No. 21-00-07, Teal 2		128,968
Total U.S. Department of Education				-	126,906
U.S. Department of Homeland Security - Federal Emergency Management Agency					
Passed through Michigan State Police					
Disaster Grants - Public Assistance (Presidentially Declared Disasters)	Pass-through	97.036	FEMA-4381-DR-MI	<u> </u>	1,077,320
U.S. Department of Justice					
Passed through Michigan State Police					
Edward Byrne Memorial Justice Assistance Grant Program	Pass-through	16.738	LETTER DATED 05/23/2022		2,351
Total Other Federal Awards				51,721	5,471,956
Total Federal Awards				\$ 7,989,656	\$ 93,477,548

Notes to Schedule of Expenditures of Federal Awards

Year Ended June 30, 2023

Note 1 - Basis of Presentation

The accompanying schedule of expenditures of federal awards (the "Schedule") includes the federal grant activity of Michigan Technological University (the "University") under programs of the federal government for the year ended June 30, 2023. The information in the Schedule is presented in accordance with the requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (the "University, it is not intended to and does not present the financial position, changes in net position, or cash flows of the University.

Note 2 - Summary of Significant Accounting Policies

Expenditures reported in the Schedule are reported on the accrual basis of accounting. Such expenditures are recognized following the cost principles contained in Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards*, wherein certain types of expenditures are not allowable or are limited as to reimbursement. Negative amounts shown on the Schedule represent adjustments or credits made in the normal course of business to amounts reported as expenditures in prior years. The pass-through entity identifying numbers are presented where available.

The University elected not to use the 10 percent *de minimis* indirect cost rate to recover indirect costs, as allowed under the Uniform Guidance, since the University has an approved indirect cost rate through its cognizant agency.

Note 3 - Adjustments and Transfers

As allowable and in accordance with federal regulations issued by the U.S. Department of Education, during the year ended June 30, 2023, the University carried forward \$13,856 of Federal Supplemental Education Opportunity Grant Program (ALN 84.007) and \$29,120 of Federal Work-Study Program (ALN 84.033) from 2021-2022 that was spent in 2022-2023.

Note 4 - Loan Balances

Loans outstanding at the beginning of the year and loans made during the year are included in the federal expenditures presented in the schedule of expenditures of federal awards. The balances of loans outstanding consist solely of the Perkins Loan program, which had an outstanding loan balance of \$2,860,383 at June 30, 2023.

Schedule of Findings and Questioned Costs

Schedule of Findings and Questioned Costs

Section I - Summary of Auditor's Resul	Its					
Financial Statements						
Type of auditor's report issued:	Unmodified	Unmodified				
Internal control over financial reporting:						
 Material weakness(es) identified? 	Yes X No	D				
 Significant deficiency(ies) identified that are not considered to be material weaknesses? 	Yes X N	one reported				
Noncompliance material to financial statements noted?	Yes X N	one reported				
Federal Awards						
Internal control over major programs:						
 Material weakness(es) identified? 	Yes <u>X</u> No	0				
 Significant deficiency(ies) identified that are not considered to be material weaknesses? 	Yes X_N	one reported				
Any audit findings disclosed that are required to be rep accordance with Section 2 CFR 200.516(a)?	ported inYesX_No	0				
Identification of major programs:						
ALN Name of Feder	ral Program or Cluster	Opinion				
Various Research and Development Cluster	pr	Unmodified				
Dollar threshold used to distinguish between type A and type B programs:	\$2,804,326					
Auditee qualified as low-risk auditee?	<u>X</u> Yes No	0				
Section II - Financial Statement Audit F	Findings					
Reference Number	Finding					
Current Year None						
Section III - Federal Program Audit Find	dings					
Reference Number	Finding					
Current Year None						