



WESTAR QUARTERLY REPORT

Reporting Period: 3rd quarter 2018

Report Date: October 31, 2018

EPA Grants No.

XA-99T67301-0

NPS Agreement No. Task 3:

P15AC01632

Task 4: P16AC01109

Task 5: P18AC01186

BLM Agreement No. L14AC00077

BLM Agreement No. L16AP00004

API Contract No. 2016-110934

Regardless of funding source, all of the projects and activities conducted by WESTAR are consistent with and intended to achieve the purposes of the organization spelled out in Article 2 of WESTAR's Articles of Association, including promoting the exchange of information related to air quality management, developing procedures to meet air quality objectives and to protect environmental resources, to establish workgroups to investigate specific topics, and to develop recommendations for the consideration of the membership. This report summarizes activities and outcomes for this reporting period.

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1. EPA CORE GRANT 2017-2019

Note: Work on activities and spending against this grant began December 2017.

a. Budget Summary and Status

The following tables summarize the status of WESTAR's Core Grant budget, comparing cumulative grant awards since the inception of the current grant (October 1, 2017) through the end of the most recent quarter.

EPA Core Grant 2017-19 Expenses by Object Class through 9/30/2018

Object Class	Budget	This Quarter	Cumulative Expenses	Percentage
1. Personnel	837,060	84,245	261,157	31%
2. Fringe Benefits	252,117	21,980	67,353	27%
3. Travel	762,400	35,637	122,564	16%
4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	1,040,851	65,156	112,353	11%
7. Construction	0	0	0	
8. Other	397,561	59,560	151,243	38%
9. Indirect Expenses	1,138,717	81,866	257,810	23%
Totals	4,428,706	348,444	972,480	22%

a. Activity Summary: Operations Project

The purpose of the Operations project is to develop, implement, and support the policy and technical activities at WESTAR that benefit member states. Funding for this project comes entirely from member state contributions. In addition, personnel from member states and federal land management agencies contribute their time and expertise to many of the tasks performed under this project.

1) Status of work plan activities – Operations Project

<i>Expected Result for Project Period</i>	<u>Results/Outcomes</u>	
	<i>2018 Q3</i>	<i>Project Period Total</i>
27 Air director conference calls, documented with minutes posted on WESTAR's website	2	7

6 Business meetings, documented with minutes and presentations posted on WESTAR’s website	1	2
105 Committee and ad hoc workgroup conference calls	11	30
12 Trips by committee chairs to brief air directors on committee activities	2	4
3 Specialty conference on a high priority topic	0	0
3 Meetings held to address emerging topics	1	1
9 Trips by committee representatives to attend national meetings and report back to WESTAR membership	1	1

2) Other Activities this Quarter – Operations Project

* WESTAR formed a workgroup and initiated review and comment development on EPA guidance on stratospheric intrusions and ozone exceptional events.

*WESTAR submitted comments to EPA on the Regional Haze Rule reconsideration and road map.

*WESTAR formed a workgroup to discuss prescribed fire and smoke management programs.

b. Activity Summary: Training Project

The purpose of the Training Project is to: (1) deliver high quality training courses/workshops that meet the needs and expectations of state and local air agency staff within the fifteen-state WESTAR region; (2) develop needed, cost-effective, responsive, and western-states-focused training opportunities; and (3) act as the main point of contact for information and educational training opportunities related to air quality training.

1) Status of work plan activities – Training Project

<i>Expected Result for Project Period</i>	<u>Results/Outcomes</u>	
	<i>2018 Q3</i>	<i>Project Period Total</i>
60 Educational opportunities developed and delivered:	5	10

- *Utah: Overview of Air Regulations & the Clean Air Act
- * Nevada: Effective Permit Writing (APTI 454)
- * Hawaii: Basic/Advanced Inspector Training (NACT 350/355)
- * New Mexico: Monitoring Compliance Testing & Source Test Observation (APTI 450/468)
- * Alaska: Principles & Practices of Air Pollution Control (APTI 452)

1800 Students trained	142	263
3450 Student training days	457	843
1 Training course developed/updated	0	0

Other Activities this Quarter – Training Project

* WESTAR staff is working with state, local and tribal air quality government agencies in the Western United States to identify each agency’s most important training needs for calendar year 2019. WESTAR’s upcoming year’s training schedule is developed based on these needs.

* WESTAR staff participates on bi-monthly conference calls with the APTI-Learn.net Maintenance, Operation and Enhancement Team to identify improvement and enhancement opportunities and provide recommendations to enhance the user’s experience with APTI-Learn website.

* WESTAR staff serves as a member on the National Training Strategy Committee. The NTS Committee has established the following goals: to understand the priority training needs of air quality agency professionals; to provide training opportunities that meet the priority needs of air quality agency professionals; to utilize course materials that are up-to-date, accurate, complete, and easy to use; to conduct all training using recognized subject matter experts and effective teachers; and to deliver effective and cost-efficient training through the use of existing, new and emerging technologies where appropriate

* WESTAR staff is an active member on two work groups under the work of the JTC. Work Group #2 (Processes for Developing and Updating Courses) is responsible for updating & developing course content by: 1) reviewing current approaches for updating existing course content and identifying potential improvements, 2) recommend approaches for developing new courses, and 3) examining how courses may be better delivered. Work Group #3 (Instructor Recruitment & Evaluation) is responsible for reviewing the current process used for instructor evaluations and recommending improvements, and the review the processes used to hire new instructors and identify new mechanism to consistently find future instructors.

* WESTAR staff is a current member of EPA’s ad hoc Access Database team charged with identifying the structure, process and methodology of creating a comprehensive database to be populated with training information such as but not limited to title, course descriptions, course instructor contact information, date of last update, and course materials to be used by state, local

and tribal agency staff WESTAR staff is also involved on the Permitting Committee which is assigned the task of taking a comprehensive look at educational opportunities related to the air quality permitting program and examining ways to improve the program.

* WESTAR is involved with the training committees at AAPCA, NACAA, and EPA’s Joint Training Committee (JTC). The JTC developed a Training Strategy Action Plan which includes efforts in: course update priorities; prioritize and initiate a plan to develop training offerings to fill gaps, based on curriculum project; develop and implement a process to determine the highest priority training needs on an on-going basis; develop and implement a plan for further enhancement and on-going maintenance of APTI-Learn; and re-launch an improved Learning Management System (APTI-Learn).

c. Activity Summary: Regional Technical Support Project

The purpose of the Regional Technical Support project is to provide technical support to member agencies related to analysis of monitoring data, analysis and preparation of emissions inventories, regional modeling analyses, and operation and maintenance of web databases – all for member agencies to use in their air quality management and planning activities.

1) Status of work plan activities – Regional Technical Support Project

<i>Expected Result for Project Period</i>	<i>Results/Outcomes</i>	
	<i>2018 Q3</i>	<i>Project Period Total</i>
75 Workgroup Conference calls	24	62
30 Technical Steering Committee conference calls	3	10
6 Face-to-face WRAP Board meetings	1	2
30 Travel support provided to local agency and tribal WRAP Board members	4	10
3 Technical Steering Committee Face-to-face meetings	0	1
30 WRAP Board calls	2	8

2) Other Activities this Quarter – Regional Technical Support Project

- Staff continued the development of the WRAP Regional Technical Center through discussions with state and federal agencies, now included in the WRAP 2018-19 Workplan.

- Staff continued to work with state and federal agencies, including regional EPA offices, to discuss and collect input on regional technical analysis needs in the western U.S.
- Dissemination of reports, data, and summary results were conducted via the [WRAP](#), [IWDW-WAQS](#), [TSSv2](#), and [WRAP Fire Tools](#) websites
- The WRAP Technical Steering Committee and 5 Work Groups (Fire & Smoke, Oil & Gas, Regional Technical Operations, Tribal Data, and Regional Haze Planning) under their direction met regularly.
- Significant progress was made implementing the 2018-19 WRAP Workplan, including a major progress report to the Board and Council at the WESTAR-WRAP Sept. 18-19 Fall meeting.

2. NPS COOPERATIVE AGREEMENT

Under this agreement, WESTAR/WRAP has agreed to cooperate with the National Park Service in furthering the understanding of air quality formation, transport and effects in the western U.S., which includes but is not limited to ambient monitoring and data reporting, creation and operation of databases, development of emission inventories, performance of air quality modeling to understand the effects of pollution and to facilitate discussion of possible mitigation, and the development of outreach and education products toward bettering the understanding of Western air quality by the public and stakeholders.

Projects and activities under this Agreement will be individually authorized by separate task agreements, with each project or activity having a separate work plan and budget developed cooperatively between the NPS and WESTAR/WRAP.

TASK 1: 3-State Study Coordination and Data Warehouse (P14AC00133)

This Task was completed on 9/30/2014.

TASK 2: Three State Air Quality Study (P14AC01122)

This Task was completed on 6/30/2016.

TASK 3: Intermountain West Data Warehouse – Western Air Quality Study (IWDW-WAQS) (P14AC01122)

Under this Task Agreement, WESTAR/WRAP provides collaboration and coordination services for states, tribes, local air agencies, and federal agencies across the Western U.S. under the leadership of the agencies sponsoring the IWDW-WAQS for the federal and state agencies cooperating through the IWDW memorandum of understanding. The IWDW project builds upon and expands the Three-State Data Warehouse supported in Task 2. Tasks 3, 4, and 5 continue seamlessly from the end of Task 2. The IWDW and associated Western Air Quality Study (WAQS) modeling effort have the following shared objectives:

- Provide storage and access to consistent, sufficient, comparable and high-quality technical data.

- Provide consistent protocols for technical data and its analysis for air quality impacts to be performed by the IWDW-WAQS partner agencies.
- Initiate and support collaborative work by the federal and state partners on National Environmental Policy Act (NEPA) air quality analyses relative to energy development and for a broad range of air quality planning activities, including emissions, meteorological and air quality modeling.
- Develop technical capacity and improved data sets for the cooperating agencies using standardized reproducible data collection, quality assessment, analysis and storage protocols.
- Identify, document and apply criteria for base year and future year projections.
- Assist NPS and the IWDW–WAQS Governing Board in identifying ways and means of ongoing funding to support the data warehouse when operational
- Identify the mechanisms to be used by the technical work groups to report to the Oversight Committee and Governing Board for the IWDW–WAQS.

WESTAR/WRAP staff serve as project coordinator for the IWDW-WAQS, at 0.20 FTE time.

a. Activity Summary

Work during this quarter focused on support for the Oversight Committee and Governing Board, as well as for the NPS and EPA agencies individually, to support development of the IWDW-WAQS Cooperator Workplan for approval by the Governing Board, for implementation over the next 2 years.

Summary of Work Plan Activities

<i>Expected Results for Project Period</i>	<i>Results/Outcomes</i>	
	<i>2018 Q3</i>	<i>Project-to-date</i>
6 Conference calls or meetings with Governing Board or Oversight Committee	3	30
5 Face-to-face meetings	3	25
4 Technical milestones requiring special communication effort	1	29

b. Budget Summary and Status

**NPS Cooperative Agreement
Task 3 – Three State Air Quality Study # P15AC01632
Expenses by Object Class through 9/30/2018**

Object Class	Budget¹	This Quarter	Cumulative	
			Expenses	Percentage
1. Personnel	8,070	0	7,728	96%
2. Fringe Benefits	1,769	0	1,302	74%
3. Travel	4,002	0	1,292	32%
4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	482,381	240	115,076	24%
7. Construction	0	0	0	
8. Other	0	0	55	
9. Indirect Expenses	9,279	-2,683	9,819	106%
Totals	505,501	-2,443	135,273	27%

¹ WESTAR has drawn the total amount of the agreement as an advance.

TASK 4: Intermountain West Data Warehouse-Western Air Quality Study (IWDW-WAQS) (P16AC011099)

Under this Task Agreement, WESTAR/WRAP serves as the project coordinator for the IWDW-WAQS effort and performs technical tasks through contractors to include:

- Emission inventory development for oil and gas sources and applications of best available data for all other source categories;
- Air quality modeling for base year 2014 including development of model evaluation and model runs for 2014 base year and future years;
- Support and coordination of IWDW operations and maintenance;
- Assistance in education and outreach to stakeholders and the public.

a. Activity Summary

Work continued to draft a statement of work for the new join 2014 base year and future projections modeling platform as a joint project with the WESTAR-WRAP Regional Haze analysis and planning project.

<i>Expected Results for Project Period</i>	<u>Results/Outcomes</u>	
	<i>2018 Q3</i>	<i>Project-to-date</i>
1 Contract for emission inventory development and 2014 / future year modeling	0	2

6	Quarterly support and coordination for IWDW	2	15
1	Outreach assistance	1	16

b. Budget Summary and Status

**NPS Cooperative Agreement
Task 4 – Three State Air Quality Study # P1601109
Expenses by Object Class through 9/30/2018**

Object Class	Budget ¹	This Quarter	Cumulative Expenses	Percentage
1. Personnel	44,959	9,178	58,713	131%
2. Fringe Benefits	12,664	2,207	12,179	96%
3. Travel	4,400	20	45	1%
4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	117,292	0	100,576	86%
7. Construction	0	0	0	
8. Other	1,000	0	460	46%
9. Indirect Expenses	54,571	4,505	46,705	86%
Totals	234,886	15,910	218,678	93%

¹ WESTAR has drawn \$234,886 of the agreement as an advance.

TASK 5: Intermountain West Data Warehouse-Western Air Quality Study (IWDW-WAQS) P18AC01186

Under this Task Agreement, WESTAR/WRAP serves as the project coordinator for the Western Air Quality Study and performs technical tasks through contractors to include:

- Emission inventory development for oil and gas sources;
- Air quality modeling for base year 2014 and/or 2016 including preliminary assessment of an approach for establishing boundary conditions;
- Support and coordination of IWDW operations and maintenance;
- Assistance in education and outreach to stakeholders and the public;
- Organization and participation in meetings, webinars and conference calls.

a. Activity Summary

Work has not yet begun under this task.

**NPS Cooperative Agreement
Task 5 – Three State Air Quality Study # P18AC01186
Expenses by Object Class through 9/30/2018**

Object Class	Budget¹	This Quarter	Cumulative Expenses	Percentage
1. Personnel	62,748	0	0	0%
2. Fringe Benefits	12,468	0	0	0%
3. Travel	5,000	0	0	0%
4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	136,229	0	0	0%
7. Construction	0	0	0	
8. Other	0	0	0	
9. Indirect Expenses	89,305	0	0	0%
Totals	305,750	0	0	0%

3. BLM AIR QUALITY MODELING WESTERN STATES PROJECT

There are currently 2 activity areas under this project:

- 3.1 a Drill Rig NO₂ Monitoring Study, and
- 3.2 an Oil & Gas Emission Inventory Update Study for the Greater San Juan and Permian Basins.

3.1 Drill Rig NO₂ Monitoring Study

WESTAR received initial funding from the American Petroleum Institute (API) in late 2013 to organize a workgroup and develop a work plan and schedule to execute a Study to collect ambient measurements adjacent to drilling rigs to evaluate actual 1-hour NO₂ impacts from drilling operations. In addition, sufficient data would be collected regarding drilling operations that could be used to verify NO₂ air quality models. The Study will focus on short term episodes.

In May 2014, WESTAR/WRAP responded to a funding opportunity notice from the Bureau of Land Management (BLM) for this Study. A funding proposal was prepared and submitted by WESTAR/WRAP and was then awarded by the BLM as Task 1 under the BLM-WESTAR Cooperative Agreement. The BLM funding is allocated for travel and communications for WESTAR/WRAP staff to support the Study. The BLM funding is also allocated to pay the salary of a 50% full-time equivalent WESTAR contract employee. In August 2014, API transferred funding resources to WESTAR for the bulk of the Colorado field sampling contract. In December 2014, BLM provided additional grant funding to cover the remainder of the Colorado field sampling expenses, WESTAR/WRAP staff support, and a separate data formatting and analysis contracted effort. In November 2015, API provided additional funding

resources for contractor analysis of the Alaska field sampling data. In mid-Sept. 2016, an additional \$60,000 was awarded to be able to complete additional analyses of the field sampling data specifically from the Colorado study sites and to support facilitation of continued evaluation by volunteer technical workgroups of both the Alaska and Colorado field study data.

a. Activity Summary

Activities since 2016 and continuing through the third quarter of 2018 include:

- The WESTAR/WRAP contract employee organized 4 volunteer Model Evaluation Workgroup Teams and prepared a Study Summary Report as of May 2016.
- The [Drill Rig 1-hour NO₂ Collaborative Monitoring Study](#) project webpage has been updated on a regular basis, as needed.
- A technical proposal was prepared in early August 2016 as requested by the BLM for the \$60,000 that was then awarded in September. Contact was initiated with EPA and API to schedule a conference call in July 2017 of the Study Mgmt. Team to discuss how to use the BLM funds to work with and support the Workgroup Teams and their analyses.
- Funds have been awarded through contracts for some of the available funds for additional technical analysis and project mgmt. activities. This work is underway.
- EPA-led work groups of BLM, state, and interested parties are preparing peer-reviewed journal articles of the Alaska and Colorado field studies' results.
- Additional project mgmt. activities were executed, including regular communication with the Study Mgmt. Team and routine calls and coordination of the 2 EPA-organized data review teams.

b. Budget Summary and Status

The BLM initial and supplemental funding received in 2014 enabled the 2014-15 Study work and provides staff support to the entire Study. Funding for WESTAR personnel and field sampling data analysis contract support by BLM and the field sampling and data analysis contract support from API are the combined funding for this project. WESTAR-WRAP are using the funds received in Sept. 2016 to complete the field sampling data analysis phase of the project.

**BLM Air Quality Modeling Western States
Including Continuing Work on Drill Rig NO₂ Monitoring Study
BLM Cooperative Agreement # L14AC00077
Expenses by Object Class through 9/30/2018**

Object Class	Budget	This Quarter	Cumulative Expenses	Percentage
1. Personnel	16,800	0	22,818	136%
2. Fringe Benefits	6,222	0	3,721	60%
3. Travel	9,832	0	2,205	22%

4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	246,838	11,605	204,959	83%
7. Construction	0	0	0	
8. Other	1,463	0	5,101	349%
9. Indirect Expenses	18,845	-411	28,289	150%
Totals	300,000	11,194	267,093	89%

**BLM Air Quality Modeling Western States
Including Continuing Work on Drill Rig NO2 Monitoring Study
American Petroleum Institute (API) Funding
Expenses by Object Class through 9/30/2018**

Object Class	Budget	This Quarter	Cumulative Expenses	Percentage
1. Personnel	3,444	0	3,444	100%
2. Fringe Benefits	469	0	469	100%
3. Travel	0	0	0	
4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	266,759	0	261,549	98%
7. Construction	0	0	0	
8. Other	0	0	0	
9. Indirect Expenses	4,328	0	4,328	100%
Totals	275,000	0	269,790	98%

3.2 Oil and Gas Emissions Inventory Updates for the San Juan and Permian Basins

The BLM New Mexico State Office (NMSO) and the State of New Mexico Environmental Department (NMED) Air Quality Bureau need up-to-date and accurate oil and gas emission inventories in the near future to address the potential air quality and AQRV impacts associated with oil and gas development in the region. They need a comprehensive O&G emissions inventory that can be used for air quality modeling and planning. The objective of this project is to develop the input data that will be used to develop a detailed and comprehensive O&G emissions inventory for the 2014 baseline year and a future projection year using the WRAP Phase III methodology and procedures, as well as executing additional analyses to leverage EPA Greenhouse Gas Reporting Program data and perform comparative evaluation of the 2014 NEI data for the San Juan Basin compiled by EPA. This work will allow the BLM to obtain more accurate air quality and AQRV impact assessments due to current and future O&G development activities in New Mexico.

a. Activity Summary

This project will focus on surveys of producers to update and gather data used to calculate emissions of the criteria pollutants (NO_x, CO, VOCs, PM and SO_x) and greenhouse gases (CO₂, CH₄, and N₂O). Ramboll-Environ is working for WESTAR and WRAP to prepare and analyze the surveys. Airstar Consulting is working for Ramboll-Environ as the project survey coordinator and primary industry contact. WRAP's contractors will coordinate participation and data collection from producers in the Basin. The survey data will be confidential and presented only in the aggregate for each basin. In parallel, for each basin, the contractors will work with the air regulatory agencies (New Mexico Environment Department - Air Quality Bureau, Colorado Department of Public Health and Environment - Air Pollution Control Division, and EPA Region 6, 8, and 9), and the tribes in the San Juan Basin (Navajo, Ute Mountain Ute, Southern Ute, and Jicarilla Apache) to verify and update emissions for permitted O&G point sources in the 2014 base year.

Producers will provide detailed area source data via surveys to supplement these point source data. Reviewing permitted point source data and applying the area source survey results will provide inputs that will allow the estimation of a comprehensive inventory of air pollutants covering most major O&G activities in the basin by mineral estate ownership: 1) federal, 2) trust (Indian allotted and tribal) 3) state, and 4) private (fee). The federal mineral estate will also include two (2) subparts, one associated with the decision space for National Forest System Lands, and the other with the decision space for lands under the jurisdiction of the BLM.

Due to lack of operator response to the surveys by early 2016, WESTAR-WRAP requested additional funding to develop the remaining needed Phase 1 emissions inventory inputs from the EPA 2014 Subpart W Greenhouse Gas reporting database. The BLM awarded \$90,000 in Sept. and WESTAR-WRAP's contractor completed the Phase I inputs work with a review call and final report at the end of Oct. and early Nov. 2017, respectively. The remaining project resources were applied to the preparation of the 2014 inventory and the future projection year analysis for the 2 basins, during 2018.

BLM completed final review in July 2018. The project is complete and documents are posted on the project website at: <http://www.wrapair2.org/SanJuanPermian.aspx>, with final updates made in the third quarter 2018. Selected key work products are listed below.

Future Year Emissions Projections for the San Juan and Permian Basins

Future Year Final EI Report (August 21, 2018) [PDF](#)

2028 Permian Basin Final O&G EI Projections Summary (July 3, 2018) [XLSX](#)

2028 San Juan Basin Final O&G Projections EI Summary (July 3, 2018) [XLSX](#)

Greater San Juan and Permian Basins' Future Year Emission Inventory Forecast methodologies (Sept. 13, 2017) [PDF](#)

San Juan Basin Project Documents:

Greater San Juan Subbasin Categories (June 9, 2015) [PDF](#)

San Juan Basin Tribal Reservations & O&G Activity (June, 2015) [JPG](#)

Final report - San Juan and Permian Basin 2014 Oil and Gas Emission Inventory Inputs (Nov. 2016) [PDF](#)

EPA O&G Tool 2014 O&G Input Factor Recommendations for the Portions of Greater San Juan and Permian Basins in New Mexico (May 12, 2017) [PDF](#)

Final report – San Juan and Permian Basin 2014 Oil and Gas Emission Inventory (Nov. 2017) [PDF](#)

- Greater San Juan Basin 2014 EI spreadsheet [XLSX](#)

Final report – Comparison of Oil and Gas Emission Estimates from the Greater San Juan Basin Inventory Project Emission Inventory to the 2014 National Emission Inventory (Version 2) – June 25, 2018 [PDF](#)

Permian Basin Project Documents:

Recommendations memo for Permian Basin well site equipment and operational characteristics (Feb. 10, 2016) [PDF](#)

Final report – San Juan and Permian Basin 2014 Oil and Gas Emission Inventory (Nov. 2017) [PDF](#)

- Permian Basin 2014 EI spreadsheet [XLSX](#)

b. Budget Summary and Status

BLM Oil and Gas Emissions Inventory Updates for the San Juan and Permian Basins BLM Cooperative Agreement # L14AC00077 Expenses by Object Class through 9/30/2018

Object Class	Budget	This Quarter	Cumulative Expenses	Percentage
1. Personnel	15,355	0	17,145	112%
2. Fringe Benefits	4,346	0	3,207	74%
3. Travel	1,497	0	1,025	68%
4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	159,950	0	160,593	100%
7. Construction	0	0	0	
8. Other	0	0	0	
9. Indirect Expenses	18,852	0	18,030	96%
Totals	200,000	0	200,000	100%

4. BLM-NM AIR QUALITY MODELING

Activity Summary

WESTAR and WRAP and the New Mexico Environment Department (NMED) have worked together to develop this proposal to fund ozone modeling and visibility analysis for the Four Corners area. NMED has been working with WESTAR, WRAP, and the BLM for several years on characterizing air quality in the Four Corners region and will partner with WESTAR and WRAP on this study to obtain more recent analyses of ozone and visibility in the region.

Oil and Gas (O&G) development in the inter-mountain western United States has undergone rapid increases over the last decade. The San Juan Basin in New Mexico and Colorado is a major natural gas production basin and has over 20,000 wells; while O&G production in the San Juan Basin has declined in recent years, the future development of the Mancos Shale formation represents a source of potential growth of O&G production in the basin. O&G development releases emissions of oxides of nitrogen (NO_x), volatile organic compounds (VOCs), carbon monoxide (CO), sulfur dioxide (SO₂), hazardous air pollutants (HAPs) and greenhouse gases (GHG). These emissions can lead to elevated air pollution levels that may threaten National Ambient Air Quality Standards (NAAQS), cause HAPs levels that may cause health effects, and have potential adverse effects on air quality related values (AQRVs), which include visibility and acid deposition. To address these potential air quality and AQRV impacts requires accurate and comprehensive emissions inventory of O&G sources followed by air quality modeling and planning.

In response to these challenges, the affected states, tribes and federal land managers in the region came together and formed the Four Corners Air Quality Task Force to develop control strategies for future air quality impacts from development. In addition to Colorado and New Mexico, other participating agencies include the Navajo Nation Environmental Protection Agency; the Southern Ute Indian Tribe Air Quality Program; the U.S. Environmental Protection Agency (EPA); the U.S. Department of Interior - Bureau of Land Management (BLM) and National Park Service; the U.S. Department of Agriculture - Forest Service (USFS); the U.S. Department of Energy; and the State of Utah. The Task Force included more than 100 members and 150 interested parties. Members included private citizens, representatives from public interest groups, universities, and industry, and federal, state, tribal and local governments. The O&G industry was a major participant in the Task Force with over 50 representatives.

In this Study, the NMED now needs projected emissions modeling and analysis on future year scenarios for ozone and AQRV impacts associated with O&G development in the region. WESTAR and WRAP is leading an effort to develop a new base and projection years' modeling platform for the Western United States. The platforms developed by WESTAR and WRAP for the IWDW-WAQS cooperating agencies including the 2014 baseline inventory can be used as a starting point to do a future year 2023 modeling analysis for ozone and AQRV for the Four Corners area. 2023 is a significant date for air quality planning in the West since it is the first attainment date under the 2015 Ozone standard for all nonattainment areas (to be designated by October 2018) across the country. The objective of this work is to develop several 2023

modeling runs and a 4-factor analysis for AQRV's for that year and for 2028 as an optional task. This work will allow the NMED and other cooperating agencies within the IWDW-WAQS to obtain more accurate air quality and AQRV impact assessments due to current and future O&G development activities in New Mexico and will be an essential resource for NMED's air quality planning efforts.

Now that base and projection year Oil & Gas emissions for the Greater San Juan Basin are complete, WESTAR and WRAP will leverage the next modeling platform from the IWDW-WAQS and utilize contractor support to conduct the 4-factor analyses. Resources for this study in the amount of \$40,000 were awarded in late Sept. 2016. As the work in this leveraged against the next generation of the IWDW-WAQS base and projection years' modeling platform and the contract for that work has not yet been awarded, a more detailed report of the progress in modeling and analysis, and a schedule for this study will be included in the 4th quarter 2018 WESTAR and WRAP progress report.

- Apply base case and sensitivity test inventories in IWDW-WAQS modeling platform When modeling platform is ready

The workplan for this analysis will be completed in the 4th quarter 2018.

a. Budget Summary and Status

**BLM-NM Air Quality Modeling - Four Corners
BLM Cooperative Agreement # L16AP00004
Expenses by Object Class through 9/30/2018**

Object Class	Budget	This Quarter	Cumulative Expenses	Percentage
1. Personnel	0	0	0	
2. Fringe Benefits	0	0	0	
3. Travel	0	0	0	
4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	40,000	0	0	0%
7. Construction	0	0	0	
8. Other	0	0	0	
9. Indirect Expenses	0	0	0	
Totals	40,000	0	0	0%

5. AMERICAN PETROLEUM INSTITUTE - BACKGROUND OZONE SCIENTIFIC ASSESSMENT PROJECT

A grant was awarded by the American Petroleum Institute to WESTAR for work related to a Background Ozone Scientific Assessment project, to include conducting a workshop and publishing in a peer-reviewed journal. The WESTAR and WRAP workshop and scientific journal article will identify current scientific and technical knowledge, and list and prioritize additional analysis needs to support air quality management and planning activities. The workshop was held March 28-29, 2017 in Denver, CO.

Goals for this Assessment

- Summarize key spatial and temporal patterns of baseline O₃.
- Review published work on U.S. Background Ozone (USBO) for the continental U.S. and summarize consistent and robust patterns.
- Identify discrepancies between estimates of USBO and, if possible, the causes for these discrepancies.
- Examine different approaches used to get USBO and evaluate strengths/weaknesses of these approaches.
- Examine evidence for Non-Controllable Ozone Sources (NCOS) and their role in daily and seasonal O₃ concentrations.
- Review methods to quantify NCOS and evaluate strengths/weaknesses of each approach.
- Develop a set of recommendations for future research in this area.
- Emphasize new research since 2011, since the National Academy of Sciences report and University of Texas-Austin assessment.

Accomplishments of the Denver March 28-29 Workshop

- Provided a forum for broader input to the assessment from all knowledgeable experts;
- Provided a forum for discussion of key uncertainties;
- Identified new methods and tools that the core group might not be aware of;
- Identified specific scientific publications that were previously missed;
- Made specific recommendations for future research that the committee should consider.
- Involved approximately 150 participants (~50% in-person/~50% online);
- Included 18 oral presentations plus a handful of posters; and
- Provided extensive time for discussion.

The manuscript for the assessment was submitted to *Elementa: Science of the Anthropocene* in March 2018. The article was published in July 2018, see link below. The project is complete.

[Scientific assessment of background ozone over the U.S.: Implications for air quality management](#), Jaffe, D.A., et. al., July 2018

API Background Ozone Scientific Assessment Project
API Contract #2016-110934
Expenses by Object Class through 9/30/2018

Object Class	Budget	This Quarter	Cumulative Expenses	Percentage
1. Personnel	6,800	0	6,773	100%
2. Fringe Benefits	1,350	0	1,347	100%
3. Travel	6,000	0	2,937	49%
4. Equipment	0	0	0	
5. Supplies	0	0	0	
6. Contractual	0	0	0	
7. Construction	0	0	0	
8. Other	20,500	0	22,375	109%
9. Indirect Expenses	5,350	0	6,568	123%
Totals	40,000	0	40,000	100%

6. OTHER SIGNIFICANT ACTIVITIES

WESTAR co-chairs the Federal/State Technical Work Collaboration Group and organizes monthly and quarterly conference calls to share information about EPA and MJO technical work.

WESTAR and state staff from several member agencies are participating in Workgroups to develop the EPA-Multijurisdictional Organization-State Emissions Modeling Platform for calendar year 2016. Information is at: <http://views.cira.colostate.edu/wiki/wiki/9169>

7. CONSOLIDATED EXPENSE SUMMARY

Cumulative Expenses by Object Class and Funding Source through 9/30/2018 All Active Accounts

	EPA	NPS	NPS	NPS	BLM	BLM	BLM	API	
Object Class	Core Grant 2017-2019	Task 3 3-State	Task 4 3-State	Task 5 3- State	Air Quality Modeling	NM Oil & Gas EI	4 Corners AQM	Background Ozone Workshop	Totals
1. Personnel	261,157	7,728	58,713	0	22,818	17,145	0	6,773	374,333
2. Fringe Benefits	67,353	1,302	12,179	0	3,721	3,207	0	1,347	89,110
3. Travel	122,564	1,292	45	0	2,205	1,025	0	2,937	130,068
4. Equipment	0	0	0	0	0	0	0	0	0
5. Supplies	0	0	0	0	0	0	0	0	0
6. Contractual	112,353	115,076	100,576	0	204,959	160,593	0	0	693,558
7. Construction	0	0	0	0	0	0	0	0	0
8. Other	151,243	55	460	0	5,101	0	0	22,375	179,235
9. Indirect	257,810	9,819	46,705	0	28,289	18,030	0	6,568	367,221
Total Expenses	972,480	135,273	218,678	0	267,093	200,000	0	40,000	1,833,524

¹ Cumulative total of \$740,387 drawn from advance for contractor expenses; advance balance = \$386,436

Current Quarter Expenses by Object Class and Funding Source – All Active Accounts

	EPA	NPS	NPS	NPS	BLM	BLM	BLM	API	
Object Class	Core Grant 2017-2019	Task 3 3-State	Task 4 3-State	Task 5 3- State	Air Quality Modeling	NM Oil & Gas EI	4 Corners AQM	Background Ozone Workshop	Totals
1. Personnel	84,245	0	9,178	0	0	0	0	0	93,422
2. Fringe Benefits	21,980	0	2,207	0	0	0	0	0	24,187
3. Travel	35,637	0	20	0	0	0	0	0	35,657
4. Equipment	0	0	0	0	0	0	0	0	0
5. Supplies	0	0	0	0	0	0	0	0	0
6. Contractual	65,156	240	0	0	11,605	0	0	0	77,001
7. Construction	0	0	0	0	0	0	0	0	0
8. Other	59,560	0	0	0	0	0	0	0	59,560
9. Indirect	81,866	-2,683	4,505	0	-411	0	0	0	83,278
Total Expenses	348,444	-2,443	15,910	0	11,194	0	0	0	373,105