Greater Yellowstone Area Clean Air Partnership 2009 Meeting Notes	November 3 and 4th Bozeman, Montana
Climate Change and Air Quality in the Greater Yellowstone Area	
Tuesday November 3 – Science of Climate Change	

GYACAP Summary and Meeting Overview Introductions	Mark Story, USFS Bozeman	Mark reviewed the GYACAP history and purpose. Meeting notes and presentations are available to the public on a website, which can be found at http://www.fs.fed.us/r1/gallatin/resources/air/gyacap
Overview of the Climate Change Science – Temperature, Precipitation, Drought, Air Quality	Steve Gray, Director of Water Resources Data System, Wyoming State Climatologist University of Wyoming	Steve presented a brief overview of current climate science, shared information on a course-level climate change forecast for western North America (includes the GYA), and discussed climate change impacts and implications on air and water resources in the GYA. A small increase in temperature (which evidence indicates is happening) could result in large to extreme decreases in streamflow due to decreases in snowpack and earlier melt (which evidence suggests is happening). With this, there could be implications on forest and grassland health (earlier growing seasons and longer, drier summers and falls), with increased wildfire activity and severity. The wildfire activity could negatively affect air quality. Climate change implications relative to management could include: • Legacy policies and practices become invalidated under new climates • Some management targets become unobtainable • Will undoubtedly exacerbate existing problems • Climate itself (and therefore management goals) will be a moving target
Regional Climate Model Simulations with Focus on Climate Change in Yellowstone National Park	Steve Hosteler, USGS, Portland, Oregon	Steve discussed global climate change simulations and their variability, and then how these simulations are downscaled to finer scales. Leading techniques are either statistical or regional dynamic model types. Steve is running models at 50-km and 15-km scales. He is using two 15-km domains, which are basically a split of North America due to computer time involved. He presented preliminary model outputs on precipitation, temperature, boundary layer, and wind speed changes, which could be useful for assessing air quality.

Climate Change Model - Statistical Downscaling to the Northern Rockies Climate Change - Landscape Conservation Cooperative	Jim Morrison, USFS, Missoula Yvette Converse, USFWS Bozeman	Jim discussed climate information needed to inform resource management decision making: • High scientific credibility • Regionally specific • Define the range of uncertainty/level of confidence • Climate variables relevant to resource management He also summarized a climate change project R1 has on-going with the University of Washington and NOAA. Deliverables include temperature and precipitation trends and projections, emission scenarios, and hydrologic impacts. Jim closed with benefits and uses regionally specific downscaled climate projections can provide: • Understand magnitude and direction of projected "local" changes • Improve understanding of uncertainty and confidence in climate projections • Reference dataset for evaluating potential impacts • Context for planning to sustain natural resources with high public values
Anticipated Ecological Consequences and Planning for Climate Change	Molly Cross, Climate Change Ecologist, Wildlife Conservation Society, Bozeman	Molly summarized past and present climate changes in the GYA, discussed current and potential ecological process changes, and presented a framework, which is being tested, for planning natural resource management in light of climate change. She discussed challenges facing natural resource management: • How to make applicable • Uncertainty • Complexity • Where to begin • What to manage for She also presented the concept of needing to reframe management goals: • Increase resistance to change • Promote resilience to change • Enable ecosystems to respond to change An example of how the framework is being used was presented. The example was Yellowstone River flows relative to maintaining Yellowstone cutthroat trout.

Wednesday November 4 – Climate Change Management and GYACAP

Greater Yellowstone Area Greenhouse Gas Inventory and Greenhouse Gas Reduction Action Plan E.O. 13423 – Sustainability Requirements Executive Order	Michael Fiebig, USFS Sustainable Operations, Greater Yellowstone Area, Bozeman	Mike presented information on the greenhouse gas inventory being conducted for GYCC. The inventory was completed in April 2009. Emission sources included in the inventory relate to employee commuting, employee travel, electricity, stationary sources, and mobile sources. Yellowstone Park has the most emissions overall. The Forest Service emits the most mobile sources. Also presented was a summary of the GYCC gas reduction action plan, which is designed to be implementable and measurable. The goal is a 20% reduction (minimum) in emissions by 2020. GYCC is currently on-track at around a 40% reduction by 2020. EO 13423 was summarized. This EO will affect management in the GYCC. The EO was signed October 5, 2009: • Within 90 days agencies must set scope 1 (direct emissions) and 2 (indirect emissions) greenhouse gas reduction targets for 2020 • Within 240 days agencies must set a scope 3 (optional emissions) greenhouse gas reduction target for 2020 • Within 15 months agencies must inventory greenhouse gas emissions using a FY 2010 baseline
Yellowstone Business Partnership – Emission Reduction Planning - Regional Transportation Cooperative, Greater Yellowstone Framework for Sustainable Development, and the Sustainable Business Operations Program	Heather Burdette, Yellowstone Business Partnership	Heather briefly summarized the history and goals of the Partnership, which focuses on assisting GYA businesses with sustainable operations. The Partnership has a reference guide for businesses to assist them with designing and implementing sustainable operations. UnCommon Sense:Business Leadership for a Sustainable Future is a training program offered by the Partnership to assist businesses with developing sustainable operations. Regional Transportation Co-op Feasibility Study is a new project for the Partnership designed to improve marketing of existing transportation services in the GYA to reduce emissions.
SW Wyoming Gas Development Activity Update – Followup to the 2008 Pinedale Field Trip	Ted Porwoll, Bridger Teton NF, Pinedale	Ted summarized current oil and gas drilling operations in the Upper Green River basin. Activity has slowed considerably due to the economic downturn. NEPA is being conducted on 11,887 wells spread across five proposals. Wyoming has submitted non-attainment designation to EPA for review (done 3/12/2009) relative to ozone. Wyoming has implemented an offset policy on emissions to control ozone formation. There are numerous offset strategies being implemented. From that, VOC has decreased considerably, but NOx has increased slightly. The NOx increase is due to VOC tradeoffs. The Wyoming Range Legacy Act has passed, which withdraws 1.2-million acres of

		National Forest from future leasing as well as sets up a process for retirement of existing leases.
Bridger-Teton NF Air Quality Monitoring – NADP, lakes bulk deposition, IMPROVE Results of SAS Analysis of Trends	Jill Grenon, Air Quality Trainee, Bridger Teton NF	Jill summarized her analysis of air quality data collected over the last 25 years in the Wind River Range. The analysis consisted of lake chemistry, bulk deposition, NADP, and IMPROVE visibility data. Jill found trends were similar to USFS R1 air quality trends except for an increasing trend in nitrogen in lakes and bulk deposition.
2010 & 2011 GYCC Air Quality Grant Proposals, Wrapup and Plan 2010 GYACAP meeting adjourn	Mark Story	Mark Story will submit a proposal for publishing a General Technical Report on the Wind River Range air data analysis (BTNF and SNF). Susan O'Ney will submit a proposal for funding assistance for installing air quality monitoring equipment. Susan O'Ney will also submit a 2011 proposal to model air circulation change due to climate change. The next meeting will be in Jackson, Wyoming October 13th and 14th, 2010. Ted, Mark, and Susan will organize the meeting.