

Public Services

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VERNM. REDIFER, P.E., Director

April 23, 2015

Charles McKinney
Department of Ecology, Central Region Office
15 W. Yakima Ave. Suite 200
Yakima, WA 98902-3452

Re: Lower Yakima Valley GWMA - 2015 First-Quarter Report (IAA No. C 1200235)

Dear Charlie:

Enclosed please find one (1) copy of Yakima County's first-quarter report as required under Attachment A, Statement of Work, Agreement No. C 1200235 between the State of Washington Department of Ecology and Yakima County.

This report addresses deliverables 1.1 and 2.2 as required under the agreement.

Deliverable 2.1, invoices, to be sent under separate cover.

If you have any questions, please let me know.

Thank you.

Lisa H. Freund, Administrative Manager
Yakima County Public Services

enclosure

Yakima County ensures full compliance with Title VI of the Civil Rights Act of 1964 by prohibiting discrimination against any person on the basis of race, color, national origin, or sex in the provision of benefits and services resulting from its federally assisted programs and activities. For questions regarding Yakima County's Title VI Program, you may contact the Title VI Coordinator at 509-574-2300.

If this letter pertains to a meeting and you need special accommodations, please call us at 509-574-2300 by 10:00 a.m. three days prior to the meeting. For TDD users, please use the State's toll free relay service 1-800-833-6388 and ask the operator to dial 509-574-2300.

**IAA No. C 1200235 – First Quarter 2015 Report
Lower Yakima Valley GWMA
March 31, 2015**

**TASK 1 - ADMINISTRATIVE FUNCTIONS
DELIVERABLES**

1.1 Meeting Records

For each meeting of the GWAC, submit a copy of the agenda, minutes, attendance and public meeting notice at the end of each quarter.

Attachment (A) includes the final GWAC meeting summaries of December 18, 2014, and February 19, 2015; the Education and Public Outreach (EPO) Working Group summaries of February 4 and March 4, 2015; the Livestock/CAFO Working Group summary of February 5, 2015; the Irrigated Ag Working Group (IAWG) summary of February 5, 2015; the Residential, Commercial, Industrial, and Municipal (RCIM) Working Group summary of March 26, 2015; the Data Collection, Characterization and Monitoring Working Group summary of February 25, 2015; and the Regulatory Framework Working Group summaries of February 19 and 26, 2015. The Funding Working Group did not hold a meeting in the first quarter.

**TASK 2 - PROGRAM FUNCTIONS
DELIVERABLES**

2.2 Status Report

Submit written quarterly status reports summarizing GWAC plans, activities and work products, and describing any interlocal agreements or other contracts by the end of each quarter.

Work Plans and Products

The GWAC working groups continued their tasks related to GWMA Plan development: Irrigated Ag (IAWG) prepared to launch the second round of Deep Soil Sampling (DSS); Regulatory Framework held its first study session on State and Federal regulations governing groundwater, and all working groups reviewed and responded to a GWMA Plan Timeline that outlined the steps each group needs to take to complete the plan.

At its February 19 meeting, the full GWAC agreed to the design of an ambient groundwater monitoring system, and had the first look at the GWMA Plan Timeline. The working group chairs were tasked with reviewing their working group's responsibilities relative to the timeline, discussing the timeline with their members, and returning comments and edits to the GWAC at its April meeting.

The GWAC also discussed the results of the first round of Deep Soil Sampling. They learned that in preparation for the second round, the survey questionnaire had been revised. As of this writing, 50 fields signed up to participate in round two.

An interlocal agreement between Washington State Department of Agriculture (WSDA) and Yakima County to develop a Comprehensive Nitrogen Loading Assessment for the Lower

Yakima Valley Groundwater Management Area was executed on March 31, 2015. The scope of work and budget set forth in this contract was approved by the GWAC on December 18, 2014 in the document "Comprehensive Nitrogen Loading Assessment for the Lower Yakima Valley Groundwater Management Area-Scope of Work and Budget," version 1.2a, dated December 3, 2014.

Membership update. Ryan Ibach replaced Gordon Kelly as the Yakima Health District representative.

The GWMA Plan Timeline 1-29-15, the Round One Deep Soil Sampling data report and the revised questionnaire are included as Attachment (B). The interlocal agreement is included as Attachment (C)

Working Group Activities:

Education and Public Outreach (Lisa Freund, Chair)

The EPO met on February 4 and March 4 to review progress on the GWMA Web Update and determine next steps for the Abandoned Wells campaign. At the March meeting the group also reviewed and commented on the GWAC timeline. The group was informed that the web update will be integrated with the County's migration to a new web program called Civic Plus; the launch date is scheduled for later this year.

After research and discussion, the group agreed that the proposal to identify abandoned wells should be remanded back to the RCIM. They further agreed that the RCIM or Data group needs to provide substantive data to the EPO regarding abandoned wells for the EPO to create an effective and targeted outreach campaign. RCIM chair Robert Farrell was advised of this decision.

In response to the GWAC's February 19 request, the EPO also reviewed the Phase 1 High Risk Well Testing results to identify what the results mean. The group agreed that the data show a great need for well owners to be familiar with their wells and to test their wells more frequently. The EPO agreed to review national resources to identify what will work for the local population.

The EPO also agreed to draft a letter to the High Risk Well Assessment participants for the GWAC's approval at its April meeting.

In response to the GWMA Timeline, the group agreed to push back the dates for the Phase II High Risk Well Assessment.

Livestock/CAFO (Charlie McKinney, Chair)

The group met on February 5. They learned that obtaining data on manure lagoons associated with EPA's Lower Yakima Valley Consent Order would not be a data source, as previously discussed, because the dairies decided to line all of the lagoons and forgo the assessment step. The group also discussed an annotated literature review on manure lagoons, the need to analyze the nitrate contribution of pens and manure/compost storage areas, and the need to address the 2014 task list related to potential nitrate sources. The group will continue to work on developing strategies for assessing lagoons as a nitrate source and for pen and manure storage areas.

Irrigated Ag (Jim Trull, Chair)

The IAWG met on February 5 to review and discuss Deep Soil Sampling (DSS) progress, and to establish tasks to be completed in the second quarter of 2015. The tasks identified were 1) further refine and rank Best Management Practices (BMPs) for Irrigated Agriculture, 2) provide input to the GWAC regarding the GWMA plan and 3) consider ways to collect data on Irrigation Water Management.

Round Two Deep Soil Sampling. It was reported that 50 fields have been signed up for testing in the second round, which will be performed in the second quarter of 2015. The questionnaire revisions were also completed and will be used for the upcoming sampling.

Residential, Commercial, Industrial, and Municipal (RCIM) (Robert Farrell, Chair)

The group met on March 26 to discuss EPO's decision to remand the Abandoned and Decommissioned Wells project back to the RCIM. The GWMA Plan Timeline and RCIM's responsibilities relative to the timeline were also discussed.

Avery Richardson, Ecology Hydro-geologist, presented the challenges of identifying and properly decommissioning abandoned wells. A discussion followed regarding available well records and how to conduct online searches for new, decommissioned or replaced wells. The group was asked to quantify how important abandoned wells are to overall nitrogen loading. After lengthy discussion, it was observed that identifying abandoned wells is a "cart and horse" issue: overall nitrogen loading by source can be best quantified after a groundwater monitoring system is in place.

Meanwhile, EPO will move forward with an outreach campaign, based on existing agency materials.

The group reviewed the GWMA timeline related to RCIM assignments. The group agreed to survey municipal sources and use the data as a substitute for residential sources.

Data Collection, Characterization and Monitoring (Kirk Cook, Chair)

The group met on February 25 to discuss the timeline and details associated with the Comprehensive Nitrogen Loading Assessment. There was broad discussion around the analysis of CAFO data, the grower survey and data synthesis, and the timeline and level of specificity. The grower survey was expected to begin in the second quarter. The target was to obtain information from owners representing at least 33 percent of each commodity based on acreage.

Regulatory Framework (Tom Eaton Chair)

The working group held its first study session on February 19. The session focused on State and Federal ordinances: the Safe Drinking Water Act, State Water Pollution Control Act, Washington State Drinking Water Standards, Class A and Class B Water Systems, Clean Water Act, State Waste Discharge Permits.

The working group assessed the session in a February 26 conference call. The group concluded that the agenda was too full to discuss each law and more sessions would be needed. Frustration was voiced that speakers did not address enforcement. It was pointed out that the intention of the first session was to lay down the fundamentals, then analyze whether the regulatory structure is sufficient. Additional discussion took place around time, presenters, cost, the laws and concern about how (if) the laws are being implemented and if they are making a difference.

For upcoming sessions, members requested session materials be provided at least a week in advance, and a round table seating approach. In turn, members were asked to suggest relevant legal authority for consideration, and list their priority topics for upcoming sessions.

Remaining study sessions will be held in the second quarter.

GWMA Website

The website and calendar continued to be maintained in real time. The EPO's web update will be integrated with the County's migration to a new web program, slated for completion later this year.

Contracts and Interlocal Agreements:

The "Amendment to Agreement between Yakima County and Radio KDNA" for conference room rentals was executed on January 20, 2015.

The "Interlocal Agreement between Washington State Department of Agriculture and Yakima County" to develop a comprehensive nitrogen loading assessment for the Lower Valley Groundwater Management Area was executed on March 31, 2015 in an amount not to exceed \$45,000.

The WSDA will provide the necessary resources for performing the work set forth in the "Comprehensive Nitrogen Loading Assessment for the Lower Yakima Valley Groundwater Management Area-Scope of Work and Budget," version 1.2a, dated December 3, 2014. Under the contract, WSDA will develop a comprehensive database for all nitrogen sources covered by RCIM, Irrigated Agriculture, and Livestock Agriculture. This scope of work and budget was approved by the GWAC on December 18, 2014.

The agreements are included as Attachment (C)

Attachment A

- GWAC Attendance Roster Record for February 19, 2015.
- Final GWAC meeting summary for December 18, 2014 and Final GWAC meeting summary for February 19, 2015; Public Meeting Notice and Agenda.
- Education and Public Outreach (EPO) Working Group Summaries of February 4 and March 4, 2015.
- Livestock/CAFO Working Group summary of February 5, 2015.
- Irrigated Ag Working Group (IAWG) summary of February 5, 2015.
- Residential, Commercial, Industrial and Municipal (RCIM) Working Group Summary of March 26, 2015.
- Data Collection, Characterization and Monitoring Working Group summary of February 25, 2015.
- Regulatory Framework (REG) Working Group summaries of February 19 and 26, 2015.

Groundwater Advisory Committee (GWAC) Attendance Roster
February 19, 2015

Member	19-Feb-2015
Stuart Turner	Present
Chelsea Durfey	Absent
Bud Rogers	Present
Kathleen Rogers	Present
Patricia Newhouse	Present
Sue Wedam	Present
Doug Simpson	Present
Jean Mendoza	Present
Eric Anderson	Absent
Jan Whitefoot	Absent
Jim Dyjak	Present
Steve George	Present
Frank Lyall	Present
Jason Sheehan	Present
Dan DeGroot	Present
Jim Trull	Present
Ron Cowin	Absent
Laurie Crowe	Present
Jim Newhouse	Absent
Robert Farrell	Absent
John Van Wingerden	Present
Rand Elliott	Present
Vern Redifer	Present
Gordon Kelly	Present
Dr. Troy Peters	Present
Tom Eaton	Present
Marie Jennings	Absent
Elizabeth Sanchey	Present
Tom Ring	Absent
Kirk Cook	Present
Virginia "Ginny" Prest	Absent
Andy Cervantes	Present
Ginny Stern	Present
Charlie McKinney	Present
Tom Tebb	Present
Lino Guerra	Present
Rick Perez	Absent

YAKIMA VALLEY GROUNDWATER MANAGEMENT AREA ADVISORY COMMITTEE (GWAC)

MEETING SUMMARY

Thursday, December 18, 2014 – 5:00 p.m. – 7:00 p.m.

Radio KDNA

121 Sunnyside Ave, Granger WA 98932

Note: This document is only a summary of issues and actions of this meeting. It is not intended to be a transcription of the meeting, but an overview of points raised and responses from Yakima County and Groundwater Advisory Committee members. It may not fully represent the ideas discussed or opinions given. Examination of this document cannot equal or replace attendance.

I. Call to Order

Roll Call: This meeting was called to order at 5:10 p.m. by Penny Mabie, Facilitator.

Member	Seat	Present	Absent
Stuart Turner	Agronomist, Turner and Co.,	✓	
Chelsea Durfey		✓	
Bud Rogers	Lower Valley Community Representative Position 1		✓
Kathleen Rogers	Lower Valley Community Representative Position 1 (alternate)		✓
Patricia Newhouse	Lower Valley Community Representative Position 2	✓	
Sue Wedam	Lower Valley Community Representative Position 2 (alternate)	✓	
Doug Simpson	Irrigated Crop Producer	✓	
Jean Mendoza	Friends of Toppenish Creek	✓	
Eric Anderson	Friends of Toppenish Creek (alternate)		✓
Jan Whitefoot	Concerned Citizens of the Yakama Reservation		✓
Jim Dyjak	Concerned Citizens of the Yakama Reservation (alternate)		✓
Steve George	Yakima County Farm Bureau	✓	
Frank Lyall	Yakima County Farm Bureau (alternate)	✓	
Jason Sheehan	Yakima Dairy Federation	✓	
Dan DeGroot	Yakima Dairy Federation (alternate)	✓	
Jim Trull	Roza-Sunnyside Joint Board of Control	✓	

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Groundwater Management Area (GWMA):

The purpose of the GWMA is to reduce nitrate contamination concentrations in groundwater below state drinking water standards

Ron Cowin	Roza-Sunnyside Joint Board of Control (alternate)		✓
Laurie Crowe	South Yakima Conservation District	✓	
Jim Newhouse	South Yakima Conservation District (alternate)		✓
Robert Farrell	Port of Sunnyside	✓	
John Van Wingerden	Port of Sunnyside (alternate)	✓	
Rand Elliott	Yakima County Board of Commissioners	✓	
Vern Redifer	Yakima County Board of Commissioners (alternate)	✓	
Gordon Kelly	Yakima County Health District	✓	
Dr. Troy Peters	WSU Irrigated Agriculture Research and Extension Center	✓	
Tom Eaton	U.S. EPA	✓	
Marie Jennings	U.S. EPA (alternate)		✓
Elizabeth Sanchey	Yakama Nation	✓	
Tom Ring	Yakama Nation (alternate)		✓
Kirk Cook	WA Department of Agriculture	✓	
Virginia "Ginny" Prest	WA Department of Agriculture (alternate)		✓
Andy Cervantes	WA Department of Health		✓
Ginny Stern	WA Department of Health (alternate)	✓	
Charlie McKinney	WA Department of Ecology	✓	
Tom Tebb	WA Department of Ecology (alternate)		✓
Lino Guerra	Hispanic Community Representative		✓
Rick Perez	Hispanic Community Representative (alternate)		✓

13

14 **II. Welcome & Meeting Overview**

15 Moment of Silence

16 Introductions

17 **III. Committee Business: Penny Mabie**

18 The October 16, 2014 meeting summary was approved as presented.

19 Jean Mendoza noted she disagreed with an opinion expressed in the October 16, 2014
 20 meeting that Yakima County has the experience necessary to effectively manage contracts.
 21 The GWAC approved Jean's request to distribute information to the committee supporting
 22 her concerns and note her concerns in the meeting record.

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23 Facilitation Support for 2015 – Vern Redifer

24 Vern announced that the contract with EnviroIssues expires at the end of December. Penny
25 excused herself so the GWAC could discuss EnviroIssues' contract and facilitation services.
26 Members felt that it was critical to have a facilitator at the outset and Penny was very
27 instrumental in getting the group where it is today; however, members felt that the group
28 is now established and no longer needs an outside facilitator. The money could be better
29 spent on GWMA program efforts. Vern noted that he and Penny had discussed the
30 contract and she feels that she is no longer needed on a day-by-day basis.

31 A member suggested that Jim Davenport act as the facilitator as he was already facilitating
32 several of the working groups. Vern agreed, noting that Jim had volunteered to serve in
33 this capacity. The group affirmed the decision to have Jim serve as the GWAC facilitator. It
34 was further noted that the contract with EnviroIssues will not be renewed.

35 **Actions:** Yakima County will not renew EnviroIssues's contract. Jim Davenport will serve as
36 the GWAC meeting facilitator.

37 IV. Nutrient Loading Assessment Scope of Work (SOW) Version 1.2a dated December 3, 2014
38 – Kirk Cook

39 Kirk reviewed a Scope of Work that had been distributed to the committee. The intent of
40 the assessment is to better understand the sources of nitrogen in the GWMA and provide a
41 foundation on which the GWAC can make future recommendations about Best
42 Management Practices and other actions to address groundwater contamination. He said
43 the data working group discussed the SOW, he received many comments and made
44 adjustments to the proposed SOW and there is still one dissenting opinion on the work
45 group. Kirk noted that the Washington State Department of Agriculture (WSDA) had
46 acquired additional information to supplement the data. He suggested that the assessment
47 may have to utilize peer-reviewed published reports. He reminded the group that the SOW
48 is a living document and can be modified. There will be a lot more work done on the
49 nutrient loading assessment this spring.

50
51 A member asked if agricultural growers could be surveyed to get additional data for the
52 assessment. Kirk noted that he assumed those who were sent the announcement about
53 the Deep Soil Sampling (DSS) received the accompanying survey, which may yield
54 information for the Nutrient Loading Assessment, but that it appeared few surveys had
55 been submitted. Kirk suggested that perhaps it was not clear that participating in the
56 survey did not obligate residents to participate in the sampling. Jim Trull pointed out that
57 only those who agreed to participate in deep soil sampling were provided the survey; it did
58 not go out with the letters inviting farmers to participate.

59
60 A member noted there was probably concern that with the multitude of data being used
61 and some incomplete data, it might end up with skewed results from either under-

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COMMITTEE***Groundwater Management Area (GWMA):**The purpose of the GWMA is to reduce nitrate contamination concentrations in groundwater below state drinking water standards*

62 estimating or over-estimating by one industry or another. This assessment is not easy to do
63 since there isn't direct data; it will have to use other sources of data.

64
65 Kirk explained that this is only an approach; there will not be a lot of Deep Soil Sampling
66 data; and the data needs to be as transparent as possible. He noted the SOW is iterative
67 and discusses the kinds of data that can be used for the assessment. The data exists and
68 just needs to be carefully collected and used. Kirk said the GWAC should expect an update
69 at each meeting from Data Collection.

70
71 A member expressed concern that the assessment could be used to set an arbitrary
72 standard based on averages of what soil needs are that might be inflexible.

73
74 Another concern was that the study was not being set up to be reliable if someone
75 questions the data and the funding allocated to the effort was inadequate to produce
76 more than superficial results.

77
78 Kirk noted that WSDA and Yakima County were putting more staff time into the project
79 than what was called out in the GWAC budget. The budget for the proposed scope of work
80 was designed to stay within the GWAC budget parameters; he agreed that a lot more
81 investment will be needed and will be made outside of the GWAC budget.

82
83 Kirk discussed plans for peer review of the loading assessment. Kirk noted that Ginny Stern
84 (DOH) would provide peer review assistance. Ecology offered Melanie Redding to assist
85 with data collection and validity. Kirk noted he has also contacted the WSU Center for
86 Sustainable Agriculture staff, and intends to have up to five peer reviewers from different
87 agencies participate. He noted the Data Working Group could help be accountable to the
88 GWAC for adaptive management of the scope; could help advise and inform the GWAC
89 about how data gaps are filled; and act as a steering body for the assessment. Other
90 working groups will also need to be involved as the assessment moves into different parts
91 of data collection.

92
93 A member expressed concern with the GWAC relying on this effort, noting that no actual
94 testing for groundwater data was being planned or discussed in the GWAC and that was a
95 serious oversight in fully understanding the extent of the groundwater contamination
96 issue. Kirk concurred with the need and added that the working group was beginning to
97 discuss groundwater monitoring and needs to queue the issue up for the full committee to
98 discuss, particularly regarding what a plan should include. This could inform discussions
99 with Pacific Groundwater Group (PGG) on the Groundwater Monitoring Plan and how to
100 direct their work.

101
102 At the conclusion of the discussion, the GWAC agreed to approve the SOW in a consensus
103 agreement.

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Groundwater Management Area (GWMA):

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BOARD AND STAFF OF THE YAKIMA VALLEY WATER TREATMENT PLANT, 1000 N. 1ST AVE., YAKIMA, WA 98901-3000, TEL: (509) 225-3000, FAX: (509) 225-3001, WWW.YVWTP.COM

Action: Jim Davenport will schedule a meeting date with the Data Working group soon: probably after Christmas. PGG is onboard and he suggested that perhaps Pony could come to the next meeting.

Recommendation: The Data Working Group should act as the steering committee for the Nutrient Loading Assessment SOW and provide updates to the GWAC.

Action: Scope of Work approved.

V. Working Groups - 2014 Status Reports

Each working group chair reported on the progress their group has made on their task lists over 2014.

Funding Working Group – Vern Redifer

Nothing to report.

Data Working Group – Kirk Cook

Originally this working group was set up to be technical consultants to the other working groups; however, during the process, they met and dealt with topics such as the scope and need for a USGS proposal for a groundwater model. The Data Work Group met once after the USGS proposal. According to the meeting summary "the group was somewhat divided in the USGS proposal, as some supported it while others advised to proceed with caution if this approach was adopted." The Data Working Group made a recommendation to the GWAC that the USGS effort would be revisited in the future.

The working group brought an interim final groundwater monitoring plan to the GWAC and it was approved. The group also worked with the Irrigated Agriculture working group (Irrigated AG) to develop a questionnaire with the Deep Soil Sampling. With Jim Davenport's participation, the group now has productive meetings.

The group will be very active with the groundwater monitoring plan development in 2015 and will be working a lot on the Nutrient Loading Assessment into the spring.

Education and Public Outreach (EPO) Working Group – Lisa Freund

High Risk Well Assessment Surveys – Completed

EPO evaluations of the public questionnaire and high risk well assessment surveys were not completed as the working group could not come to agreement on an evaluation methodology.

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- 138 Education Outreach Campaign – EPO/EPA New Mom campaign is ongoing with a flyer
139 completed, printed and hand delivered by a working group member.
- 140 GWMA Educational Slides were approved and uploaded to the GWAC website to serve as a
141 reference for GWAC members.
- 142 Abandoned Wells campaign – met with the Residential, Commercial, Industrial and
143 Municipal (RCIM) working group to discuss the issue; GWAC approved the budget. It will be
144 ongoing in 2015
- 145 GWMA Website update is in process.
- 146 No other requests received from the working groups.
- 147 **Irrigated Ag Working Group – Jim Trull**
- 148 Deep Soil Sampling is underway – The Scope of Work was completed in 2013; in the first
149 half of 2014, the group resolved the confidentiality issue. 33 DSS surveys were completed
150 in 2014.
- 151 Significant change was made due to concerns about data. It is generally agreed that 200 or
152 more samples are desired. It was decided that these would be collected in four sampling
153 periods. The first round of sampling is complete and the results have been sent to Vern
154 Redifer. Vern will try to get the raw results out to the group.
- 155 They plan to encourage growers to fill out surveys even if they are not participating in the
156 Deep Soil Sampling – Early 2015
- 157 **Livestock/CAFO Working Group – Charlie McKinney**
- 158 Their charge was to address all nitrogen sources related to dairies.
- 159 Manure field application – Irrigated Ag working group is addressing this issue through the
160 deep soil sampling.
- 161 Corrals/Pens – Originally the working group thought to include this in the deep soil
162 sampling; but since they have decided DSS is not the best place to do it because of the
163 methodology being used. This effort is on hold as there is a need to develop a study design
164 with PGG and the 2015 studies.
- 165 Plan and schedule presentation on Compost Regulations/Policy – An Ecology employee is
166 currently working on this.

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167 Seepage from Lagoons – They are waiting on lagoon data from EPA. The data has been
168 collected; they are now waiting on the data to be available. Once they have acquired the
169 data they will begin evaluating it.

170 Develop CAFO/Livestock education through the EPO – This task is on hold until after the
171 study is complete.

172 **RCIM Working Group – Robert Farrell**

173 Three of the RCIM working group's four tasks were about gathering data about potential
174 nitrate sources.

175 Residential Septic Systems – Information was received from Yakima County.
176 NPDES point source permit holders – Department of Ecology supplied this information.
177 Underground Injection Control Wells – List of UIC wells received from Ecology.
178

179 The fourth task was to develop an education strategy with EPO to address risks associated
180 with abandoned/improperly decommissioned wells – That effort is ongoing.

181 There was also concern expressed about known nitrate plumes within the GWMA
182 boundary – Ecology is compiling a list of major nitrogen clean up sites.

183 The working group is also discussing deep soil sampling on RCIM sites. This may result in an
184 addendum to the DSS scope. The working group will develop a proposal and then bring to
185 the GWAC

186 There is also concern regarding loading – Ecology knows who the permit holders are but
187 don't know what the loadings are. Department of Ecology staff are helping identify how to
188 acquire this information and then RCIM will discuss with the Data Working Group.

189 **Regulatory Framework Working Group – Tom Eaton**

190 The group is about 90% done gathering information on statutes, rules and ordinances
191 related to existing regulations. This information will be provided to agencies as a guide for
192 upcoming study sessions. The working group developed a list of questions for regulatory
193 agencies to use as a guide to help them develop presentations for the upcoming study
194 sessions.

195 *Study Sessions:* The purpose of the study sessions is to learn more about regulatory
196 agencies with existing authorities regarding nitrates. What they are authorized to do and



Groundwater Management Area (GWMA):

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197 how effectively the existing regulations address potential sources of nitrates in
198 groundwater: what is working, what is not working and how the regulations or
199 implementation might be improved.

200 The working group originally scheduled two study sessions on Existing Regulatory
201 Infrastructure within the GWMA. The first session, on January 14, 2015, will address
202 regulations specific to the RCIM sources. A second session is scheduled for February 11,
203 2015 and will address regulations specific to irrigated ag sources and those applicable to
204 CAFO/livestock. It was determined that the proposed agenda was too ambitious for two
205 sessions and a third study session will be scheduled, likely at the end of January.

206 The working group suggests a similar look at incentive programs such as section 319 of the
207 Clean Water Act. The chairman of the working group suggested some other working
208 group take on that work – finding agencies that are using incentive programs and explore
209 how well they are working. The funding working group was suggested a good place for this
210 activity.

211 **VI. Proposal presented to the EPO Working Group by Health Sciences Service Learning**
212 **Group with the University of Washington – Health Sciences Schools**

213
214 Lisa described a proposal, which would partner a UW graduate class with the EPO to
215 develop messaging for the Abandoned Wells outreach campaign. Following discussion, the
216 GWAC agreed not to pursue the partnership in part because there wasn't time enough to
217 fully shape the proposal before the start of the project; the proposal was lacking in detail
218 regarding the purpose of the proposed tour and its relationship to abandoned wells, and
219 concerns about GWAC oversight of the products produced by the class. In addition the
220 member who opposed the project did not approve of the text book for the class.

221
222 **VII. Public Comment:**

223 Commentor expressed concerns with assigning an objective amount on nitrogen
224 depending on the crop and using it as a basis for regulation or standards. Under or over
225 application will impact the production of nitrates. The commentor believes the amount of
226 nitrogen applied should be left up to the farmer.

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227 **VIII.Next Steps:**

228 Future agenda items: Groundwater testing discussions and providing input on committee
229 expectations for PGG

230 The Data Working Group will act as the steering committee for the Nitrogen Loading
231 Assessment and report back to the GWAC

232 Work planning for the upcoming year:

- 233 • Vern and Jim will meet with the working groups and identify a date to report back
234 to the GWAC (February/March 2015)
235

236 **Next Meeting**

237 Thursday, February 19, 2015

238 **2015 Meeting Calendar – The GWAC approved the 2015 bimonthly meeting calendar:**

- 239 • February 19, 2015
240 • April 16, 2015
241 • June 18, 2015
242 • August 20, 2015
243 • October 15, 2015
244 • December 17, 2015 (tentative, if needed)

245 The meeting was adjourned at 7:05 p.m.

246

247 Meeting summary approved by the GWAC on February 19, 2015.

YAKIMA VALLEY GROUNDWATER MANAGEMENT AREA ADVISORY COMMITTEE (GWAC)

MEETING SUMMARY

Thursday, February 19, 2015 – 5:00 p.m. – 7:00 p.m.

Denny Blaine Building Board Room
810 E. Custer Avenue, Sunnyside, WA 98944

Note: This document is only a summary of issues and actions of this meeting. It is not intended to be a transcription of the meeting, but an overview of points raised and responses from Yakima County and Groundwater Advisory Committee members. It may not fully represent the ideas discussed or opinions given. Examination of this document cannot equal or replace attendance.

I. Call to Order

Roll Call: This meeting was called to order at 5:05 p.m. by Jim Davenport, Facilitator.

Member	Seat	Present	Absent
Stuart Turner	Agronomist, Turner and Co.,	✓	
Chelsea Durfey			✓
Bud Rogers	Lower Valley Community Representative Position 1	✓	
Kathleen Rogers	Lower Valley Community Representative Position 1 (alternate)	✓	
Patricia Newhouse	Lower Valley Community Representative Position 2	✓	
Sue Wedam	Lower Valley Community Representative Position 2 (alternate)	✓	
Doug Simpson	Irrigated Crop Producer	✓	
Jean Mendoza	Friends of Toppenish Creek	✓	
Eric Anderson	Friends of Toppenish Creek (alternate)		✓
Jan Whitefoot	Concerned Citizens of the Yakama Reservation		✓
Jim Dyjak	Concerned Citizens of the Yakama Reservation (alternate)	✓	
Steve George	Yakima County Farm Bureau	✓	
Frank Lyall	Yakima County Farm Bureau (alternate)	✓	
Jason Sheehan	Yakima Dairy Federation	✓	
Dan DeGroot	Yakima Dairy Federation (alternate)	✓	
Jim Trull	Roza-Sunnyside Joint Board of Control	✓	

GROUNDWATER ADVISORY COMMITTEE

Groundwater Management Area (GWMA):

The purpose of the GWMA is to reduce nitrate contamination concentrations in groundwater below state drinking water standards

Ron Cowin	Roza-Sunnyside Joint Board of Control (alternate)		✓
Laurie Crowe	South Yakima Conservation District	✓	
Jim Newhouse	South Yakima Conservation District (alternate)		✓
Robert Farrell	Port of Sunnyside		✓
John Van Wingerden	Port of Sunnyside (alternate)	✓	
Rand Elliott	Yakima County Board of Commissioners	✓	
Vern Redifer	Yakima County Board of Commissioners (alternate)	✓	
Gordon Kelly	Yakima County Health District	✓	
Dr. Troy Peters	WSU Irrigated Agriculture Research and Extension Center	✓	
Tom Eaton	U.S. EPA	✓	
Marie Jennings	U.S. EPA (alternate)		✓
Elizabeth Sanchey	Yakama Nation	✓	
Tom Ring	Yakama Nation (alternate)		✓
Kirk Cook	WA Department of Agriculture	✓	
Virginia "Ginny" Prest	WA Department of Agriculture (alternate)		✓
Andy Cervantes	WA Department of Health	✓	
Ginny Stern	WA Department of Health (alternate)	✓	
Charlie McKinney	WA Department of Ecology	✓	
Tom Tebb	WA Department of Ecology (alternate)	✓	
Lino Guerra	Hispanic Community Representative	✓	
Rick Perez	Hispanic Community Representative (alternate)		✓

II. Welcome & Meeting Overview

Moment of Silence

Jim Davenport inquired from the members if they had any suggestions for the Agenda. While there were no suggestions from the members Jim mentioned that there would be a change in the order of topics.

III. Committee Business:

The December 18, 2014 meeting summary was approved as amended.

IV. Working Group Reports:



Groundwater Management Area (GWMA):

The purpose of the GWMA is to reduce nitrate contamination concentrations in groundwater below state drinking water standards

29

30 **Livestock/CAFO Working Group – Charlie McKinney**

31

32 Charlie McKinney reported the group met on February 5, 2015. They revisited the work
33 plan and are looking to find more information on possible nitrate sources from manure
34 lagoons, corrals, pens and manure storage. This will help better define the approach and
35 potential needs. They will follow up on lagoon information from the last five years.

36

37 **Irrigated Ag Working Group – Jim Trull**

38

39 Jim Trull reported the group met on February 5, 2015 and reviewed the results from the
40 first round of Deep Soil Sampling (DSS). The group determined that there is not enough
41 data at this point to come to a conclusion and more sampling will need to be done. They
42 discussed how to get more useful data and make it more streamlined. He noted they will
43 start working with Kirk Cook to coordinate the DSS survey/sampling with the nitrogen
44 loading assessment and are hoping to reach more people that way. Kirk mentioned that 30
45 percent of the area will be needed for statistical purposes. Pesticide credits may be given to
46 entice participation in the survey.

47

48 **Regulatory Framework Working Group – Tom Eaton**

49

50 Tom Eaton reported that the group has not yet met in 2015. They will be holding a
51 conference call on Thursday, February 26th at 3:00 pm to debrief on the first study session
52 and to get feedback and ideas for the upcoming sessions.

53

54 **RCIM Working Group – Robert Farrell**

55 Has not met in 2015.

56

57 **Data Working Group – Kirk Cook**

58

59 The group has not met in 2015. They will be meeting soon to discuss the Nitrogen Loading
60 Assessment. Kirk did attend the Livestock and Irrigated/Ag meetings. He will be working on
61 protocols to conduct the Nitrogen Loading Assessment.

62

63 **Funding Working Group – Vern Redifer**

64 Has not met.

Education and Public Outreach (EPO) Working Group – Lisa Freund

Lisa Freund announced that the GWMA web site update has been initiated. She reviewed the EPO's findings relative to the Abandoned Well and Septic System campaign, noting that the EPO is remanding the campaign back to the RCIM for more work.

V. Filling Open Committee Positions: Charlie McKinney

Charlie announced that GWAC member Gordon Kelly is retiring from the Yakima Health District and his replacement, Ryan Ibach, will serve as Gordon's successor on the GWAC.

Charlie added that there is a membership vacancy with the resignation of CARE. He asked the group to consider Dr. Jessica Black, an environmental sciences professor at Heritage University, to fill the vacancy. Dr. Black has expressed interest in the past and she also volunteered her class to assist with the 2013 door-to-door GWMA survey. A member mentioned that there may be a conflict of interest if the GWAC were to contract with Heritage University in the future. Another member noted that Dr. Black would need to respect the boundaries of the Yakama Nation. Jim Davenport asked who determines the GWAC membership. Charlie noted it is the Department of Ecology, but he appreciates the input from members. He will consider tonight's input before making a decision.

Action: Charlie McKinney will review the comments received tonight regarding the environmental membership position.

VI. GWMA PLAN TIMELINE 1/29/15: Vern Redifer

Vern introduced a GWMA Plan timeline, observing that it encompasses everything the GWAC is supposed to do under WAC 173-100. The timeline is organized by the six major WAC guidelines (i.e., area characterization, problem definition, goals and objectives, etc.) and contains over 190 tasks needed to complete the plan. As it appears now, the plan will not be completed until December 2017. Vern requested that the working group chairs review the timeline and provide feedback for the April meeting.

Jim Davenport asked what the Department of Ecology's expectations are regarding plan completion. Charlie replied that there are expectations within the current funding contract and they are considering a second contract towards the end of 2016. Kirk observed that it



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102 took two and a half years for the Columbia Basin to complete their GWMA, so 2017 is not
103 an unreasonable completion date.

104
105 A member asked if it makes sense to wait for Deep Soil Sampling (DSS) to finish (i.e.,
106 complete the Problem Definition) before moving ahead. It has been determined that after
107 reviewing the first round of sampling, there was not enough information to make a
108 determination and the next sampling round will be needed to calibrate the results. Part of
109 the reason [the plan] is taking so long is because of DSS. Jim Trull counseled patience,
110 noting that possibly three rounds of DSS will suffice instead of four, and that would help
111 move the process along more quickly.

112
113 A member asked if Best Management Practices are still a part of the plan. Vern stated that
114 they are, under 4. Alternatives. The effectiveness still needs to be evaluated and the data
115 will need to be reviewed.

116 Kirk suggested that collaboration is needed between the working groups to complete
117 specific tasks, rather than assigning tasks to a specific working group.

118
119 A member suggested that the Best Management Practices (BMP) need to be updated. The
120 group can use existing National Resources Conservation Service (NRCS) tools that can help
121 evaluate the BMPs.

122
123 Another member expressed confusion over the BMPs, requesting clarification regarding 1)
124 which ones are being used 2) which ones are the right ones for this data, and 3) are we to
125 comment on eliminating any of them.

126
127 Jim Davenport stated that the group needs to discuss BMPs, agree on sources and then
128 move on.

129
130 Vern stated that between June 1 and July 15th there is a lot of information to look at and it
131 will need to be narrowed down to the most appropriate for this area.

132
133 **Action:** Working Group Chairs and their respective working groups will review the timeline,
134 their specific subsections, and provide input for the April GWAC meeting.

135
136 **VII. Long-Term Monitoring Plan Objectives: Vern Redifer**

137

Vern stated that the group needs to come to a consensus of the definition of a monitoring system. The group does not have to implement a monitoring system to complete its work. The group does need to have a design to evaluate the effectiveness of the program and start new design protocols by July. The group needs to come to an objective of what it is designing.

A member asked what is the degree of specificity and how detailed will this monitoring system be.

Vern stated that we need to have an idea of the scope of our objective: what types of wells are most appropriate to meet the objective (i.e., existing wells versus purpose-built wells). We need an idea of the level of detail that will be needed by the implementing agency. We need to give an implementation plan to the jurisdiction/agency we hand it off to.

Melanie Redding, Department of Ecology, described Whatcom County's ambient monitoring program: the process they used, the results and questions that need to be thought about when data collecting. Whatcom County used a network of 35 private wells because it was too expensive to build monitoring wells. They started in 2004 and 10 years later, they have good data over time. They couldn't determine where the nitrate was coming from but were able to determine the condition of the aquifer.

Melanie observed that it's important to identify what questions the group wants answered: what are the objectives. Each strategy will answer different questions. No one study will answer all questions.

A member stated that the backbone should be structured around the GWMA goal: reducing nitrate in groundwater over time. The accepted BMPs, over time, should answer the question: is it [nitrate levels] getting better?

Vern summarized the conversation, noting the following characteristics the group had discussed:

- 35-40 purpose-built wells
- linear-flow patterns
- dispersed enough to look at different areas of the GWMA
- down to the water table/shallow aquifer

**GROUNDWATER
ADVISORY
COMMITTEE**

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Vern stated that this is an introduction to this topic and he would like the group to discuss it with the monitoring plan potential objectives in April. The group needs to come to consensus on one strategy. They need to answer the question: *what do you want?*

A member observed that based on the discussion, a decision could be made now on an ambient monitoring system.

Action: Jim Davenport made a motion asking if an Ambient Monitoring Systems is needed. The group agreed.

VIII. Public Comment:

A member of the public stated that he is surprised by the [group's] assumption that the upward nitrate trend will continue. His thoughts are that 1) farmers will become more efficient with water and nitrate use 2) while more production in valley can cause an increase in nitrogen levels, if prices decrease, production decreases and farmers can go out of business.

IX. Phase I - Well Assessment Survey Preliminary Data Results

Vern reviewed the data results and observed that it was difficult to correlate the data. Accordingly, the survey results are being sent back to the EPO to determine what they think the data means. He further requested that the EPO correlate the high/medium/low risk.

X. Next Steps:

Future agenda items: Discuss Groundwater testing and provide input on committee expectations for PGG

EPO will review the high risk well assessment data and correlate high/medium/low risk

Work groups will review the GWMA timeline and provide feedback at the April meeting

Next Meeting:

- April 16, 2015 5:00 PM
Location: Radio KDNA, 121 Sunnyside Ave, Granger, WA 98932



Groundwater Management Area (GWMA):

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211 **2015 Meeting Calendar**

212

213 April 16, 2015

214 June 18, 2015

215 August 20, 2015

216 October 15, 2015

217 December 17, 2015 (tentative, if needed)

218

219 The meeting was adjourned at 6:59 p.m.

220

221 Meeting summary approved by the GWAC on April 16, 2015.

Yakima County

**Notice of Public Meeting
Lower Yakima Valley Groundwater Advisory Committee**

NOTICE IS HEREBY GIVEN that Yakima County is holding a public meeting of the Lower Yakima Valley Groundwater Advisory Committee on **Thursday, February 19, 2015 at 5:00 PM in the Boardroom at the Denny Blaine Building (Sunnyside School District), 810 East Custer Avenue, Sunnyside WA 98944** pursuant to Chapter 173-100-080 WAC Ground Water Management Areas and Programs.

For Additional Information

To learn more about the Lower Yakima Valley Groundwater Management Area, the Groundwater Advisory Committee, and its goals and objectives, please see the Lower Yakima Valley Groundwater Management Area on the County webpage at:

<http://www.yakimacounty.us/gwma/>

For more information about the meeting, please contact Lisa Freund, Yakima County Public Services Administrative Manager at 574-2300.

Dated this **Wednesday, February 11, 2015**

Publish: **Thursday, February 12, 2015**

Bill: **FC3463-100-120**

YAKIMA HERALD REPUBLIC

INVOICE

114 N. 4th Street

PO Box 9668

Yakima, WA 98909

Date: 02/12/15

Account #: 110536

Company Name: YAKIMA COUNTY SURFACE WATER MANAGEMENT

Contact: Tina Beck, AP

Address: 128 NORTH 2ND STREET ROOM 408
YAKIMA, WA 98901

Telephone: (509) 574-2343 Fax:

Account Rep: Simon Sizer- Legals - 398

Phone #: (509) 577-7740

Email: sslzer@yakimaherald.com

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Yakima County

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Dated this **Wednesday, February 11, 2015**

(517389) February 12, 2015

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AB

YAKIMA HERALD-REPUBLIC

Affidavit of Publication

STATE OF WASHINGTON,)
COUNTY OF YAKIMA)

Debbie Martin, being first duly sworn on oath deposes and says that she/he is the Accounting clerk of Yakima Herald-Republic, Inc., a daily newspaper. Said newspaper is a legal newspaper approved by the Superior Court of the State of Washington for Yakima County under an order made and entered on the 13th day of February, 1968, and it is now and has been for more than six months prior to the date of publication hereinafter referred to, published in the English language continually as a daily newspaper in Yakima, Yakima County, Washington. Said newspaper is now and has been during all of said time printed in an office maintained at the aforesaid place of publication of said newspaper.

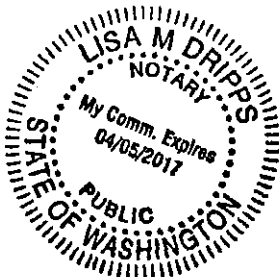
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Yakima County Notice of Public Meeti

it was published in regular issues (and not in supplement form) of said newspaper once each day and for a period of 1 times, the first insertion being on 02/12/2015 and the last insertion being on 02/12/2015

Yakima Herald-Republic 02/12/15
YakimaHerald.com 02/12/15

and the such newspaper was regularly distributed to its subscribers during all of the said period. That the full amount of the fee charged for the foregoing publication is the sum of \$71.09

Debbie Martin
Accounting Clerk



Sworn to before me this 12th day of February 2015

Lisa M. Driggs
Notary Public in and for the
State of Washington,
residing at Yakima

Yakima County

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(517389) February 12, 2015

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STATE OF WASHINGTON
COUNTY OF YAKIMA SS

Timothy J. Graff, being first duly sworn on oath deposes and says that he is the Publisher of the DAILY SUN NEWS, a daily newspaper.

That said newspaper is a legal newspaper and it is now and has been for more than six months prior to the date of publications hereinafter referred to, published in the English language continually as a daily newspaper in the city of Sunnyside, YAKIMA County, Washington, and it is now and during all of said time printed in an office maintained at the afforesaid place of publication of said newspaper, and that the said Daily Sun News was on the 4th Day of April, 1969 approved as a legal newspaper by the Superior Court of said Yakima County.

That the annexed is a true copy of a LEGAL PUBLICATION -

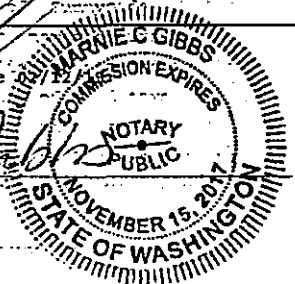
Yakima County Public Services

Groundwater Mtg 2-19-15

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Notary Public in and for
the State of Washington
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PUBLISH: DAILY SUN NEWS
February 12, 2015

**GROUNDWATER
ADVISORY
COMMITTEE**

Groundwater Management Area (GWMA):

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Meeting Time and Location

Thursday, February 19, 2015, 5:00 - 7:00 p.m.

Denny Blaine Boardroom
810 East Custer Ave.
Sunnyside, WA 98944

Optional GWAC Information Session:

- Regulatory Framework Study Session #1

Agenda

Time	Topic
2:00 – 4:15 p.m.	Study of the Existing Regulatory Infrastructure Within the Ground Water Management Area

Regular GWAC Meeting

Agenda

Time	Topic
5:00 – 5:10 p.m.	Welcome & Meeting Overview
5:10 – 5:15 p.m.	Committee Business
5:15 – 5:35 p.m.	Project Timeline
5:35 - 5:55 p.m.	Working Group Reports
5:55 – 6:15 p.m.	Long-Term Monitoring Plan Objectives
6:15 – 6:25 p.m.	Break
6:25 – 6:35 p.m.	Phase I- Well Assessment Survey Preliminary Data Results
6:35 – 6:45 p.m.	Filling Open Committee Positions
6:45 – 6:55 p.m.	GWAC Member Comments
6:55 – 7:00 p.m.	Public Comment
7:00 p.m.	Adjourn



Groundwater Management Area (GWMA):

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Next Meeting: Thursday, April 16, 2015

Committee Members

Stuart Turner, agronomist, Chelsea Durfey (alternate)	Turner and Co.
Bud Rogers, Kathleen Rogers (alternate)	Lower Valley Community Representative Position 1
Patricia Newhouse, Sue Wedam (alternate)	Lower Valley Community Representative Position 2
Doug Simpson	Irrigated Crop Producer
Jean Mendoza, Eric Anderson (alternate)	Friends of Toppenish Creek
Jan Whitefoot, Jim Dyjak (alternate)	Concerned Citizens of the Yakama Reservation
Steve George, Frank Lyall (alternate)	Yakima County Farm Bureau
Jason Sheehan, Dan DeGroot (alternate)	Yakima Dairy Federation
Jim Trull, Ron Cowin (alternate)	Sunnyside-Roza Joint Board of Control
Laurie Crowe, Jim Newhouse (alternate)	South Yakima Conservation District
Robert Farrell, John Van Wingerden (alternate)	Port of Sunnyside
Rand Elliott, Vern Redifer (alternate)	Yakima County Commission
Gordon Kelly	Yakima County Health District
Dr. Troy Peters	WSU Irrigated Agriculture Research and Extension Center
Tom Eaton, Marie Jennings (alternate)	U.S. Environmental Protection Agency
Elizabeth Sanchey, Tom Ring (alternate)	Yakama Nation
Kirk Cook, Virginia "Ginny" Prest (alternate)	Washington Department of Agriculture
Andy Cervantes, Ginny Stern (alternate)	Washington Department of Health
Charlie McKinney, Tom Tebb (alternate)	Washington Department of Ecology
Lino Guerra, Rick Perez (alternate)	Hispanic Community Representative

Committee Ground Rules:

- Come to committee meetings prepared

**GROUNDWATER
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- Treat one another with civility
- Respect each other's perspectives
- Listen actively
- Participate actively
- Honor time frames
- Silence electronic devices during meetings
- Speak from interests, not positions.

2015 Meeting Dates:

February 19
April 16

June 18
August 20

October 15
December 17 (TBD)

Meeting Materials:

Name	Date Provided	From
2014_1218_mtg 8_DraftMtgSummary_v1.doc	12/24/14	pmabie@EnviroIssues.com
2015_0219_Mtg1_Agenda.docx	2/12/15	lisa.freund@co.yakima.wa.us
EPO meeting summary_2014_1210_FINAL	2/12/15	lisa.freund@co.yakima.wa.us
EPO meeting summary_2015_0204_FINAL	2/12/15	lisa.freund@co.yakima.wa.us
Regulatory meeting summary_2014_1216_FINAL	2/12/15	lisa.freund@co.yakima.wa.us
Data WorkingGroupReport 12-3-14 FINAL_kr_v3	2/12/15	lisa.freund@co.yakima.wa.us
02_05_15 Livestock CAFO Meeting Minutes_FINAL	12/13/15	lisa.freund@co.yakima.wa.us
2015_0219 IAWG ACTIVITY REPORT	2/12/15	lisa.freund@co.yakima.wa.us
02_05_15 IAWG Meeting Minutes_FINAL	12/13/15	lisa.freund@co.yakima.wa.us
2015_0204 DSS Soil Sample Report	2/12/15	lisa.freund@co.yakima.wa.us



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2015_0204 DSS Combined Report	2/12/15	lisa.freund@co.yakima.wa.us
2013_1203 LYV GWMA-Potential Monitoring Well Locations_2	2/12/15	lisa.freund@co.yakima.wa.us
Phase I - Well Assessment Survey Preliminary Data Results	2/12/15	lisa.freund@co.yakima.wa.us

Education and Public Outreach Working Group

Charge from Groundwater Management Area Advisory Committee

Working Group Members

Andres Cervantes (GWAC-DOH), Jean Mendoza (GWAC-Friends of Toppenish Creek), Tom Tebb (GWAC-Ecology), Elizabeth Torres (Citizen), Gretchen Stewart (EPA), Nieves Negrete (Citizen), Patricia Newhouse (GWAC-Citizen Rep Position #2), Tom Eaton (GWAC-EPA), Dean Effler (Citizen), Joye Redfield-Wilder (Ecology), Stuart Turner (GWAC-Turner & Co), Ignacio Marquez (AGR)

Meetings/Calls Dates

Meeting: Wednesday, February 4, 2015

1:30 PM – 3:30 PM

Participants

Lisa Freund (EPO Chair -Yakima County), Jean Mendoza (GWAC-FOTC), Andres Cervantes (GWAC-DOH), Dean Effler (Citizen-FOTC), Lee Murdock (Yakima County), Joye Redfield-Wilder (Ecology), Patricia Newhouse (GWAC-Citizen Rep Position #2), Karri Espinoza (Yakima County Staff), *Kathleen Rogers (GWAC)

*via phone

Key Discussion Points

Welcome & Meeting Overview: Lisa Freund welcomed the group and reviewed the meeting agenda.

GWMA Web Update

Lisa and Lee Murdock provided an update on the GWMA website project. Lisa reported that she, Andy Cervantes, Lee Murdock and Gretchen Stewart (via phone) had met with Ryan Messer (Idea Marketing) and Danielle Surkatty (the County's website designer) to begin exploring the functional components of the website. Lisa explained that the functional, or "backend" components of the website will be addressed before the content. A components work sheet identifying the Needs, Wants and Wishes for the website was distributed and discussed.

Items discussed included interactive maps, archives of older documents, social media links, video campaigns, and an events and meeting calendar that would provide users with automatic updates.

A member noted that the component spreadsheet was a lot to digest in one meeting, and asked that the group be given time to review the components and provide feedback. The group agreed to this suggestion.

Lisa also asked the group to brainstorm “search words” that people might enter into a search engine to access information online about groundwater, the GWMA, or who’s at risk from nitrate (e.g., words and phrases such as “nitrate,” “newborns and nitrates,” “nitrate contamination”).

ACTION: Members will review the component sheet and send feedback along with “search word” ideas to Lisa via e-mail by Friday, February 6, 2015.

Abandoned Well Campaign

Identifying Abandoned Wells: The group discussed the EPO’s role in the identification of abandoned wells. They observed that EPO’s role is to provide education and outreach based on clear data—not to conduct research on behalf of the technical working groups.

They reviewed Ecology’s efforts and challenges it has faced to identify and decommission abandoned wells. A member summarized Ecology’s position stating, “If abandoned wells were identifiable, [Ecology] would already have done it.” The member further noted that the state health department regulates community domestic water supplies (municipal etc.) but doesn’t track water quality at private exempt wells and has no authority to go on people’s private property. The landowner is responsible for assuring clean water and proper decommissioning of wells.

Decision: Based on its research, the group agreed that the proposal to identify abandoned wells should be remanded back to the RCIM. They further agreed that the RCIM or Data group needs to provide substantive data to the EPO regarding abandoned wells for EPO to create an effective and targeted outreach campaign.

ACTION: Lisa will contact RCIM Chair Robert Farrell to advise him that EPO is remanding the identification of abandoned wells back to RCIM. She will suggest that the RCIM invite Avery Richardson, Department of Ecology hydrogeologist, to address the RCIM regarding abandoned wells.

She will further advise him that EPO will need substantive data on the location of abandoned wells before moving forward on the educational campaign.

NOTE: Lisa observed that this action may require a GWAC budget revision. The group agreed that \$20,000 of the original \$76,000 budget allocation for the Abandoned Well Campaign should remain with the EPO for outreach. The remaining \$56,000 may be reallocated to the RCIM for identification costs, subject to approval by RCIM and the GWAC.

EPO Goals and Objectives Review

An EPO Short List of Accomplishments for 2013 and 2014 was reviewed. Members identified additional outreach and highlights (e.g., outreach conducted—direct mail pieces, letters to the editor and letters to physicians regarding nitrates).

ACTION: Lisa will add the suggestions to the Accomplishment list.

The group reviewed the December 2012 EPO Communication Strategy adopted by the GWAC. A discussion took place regarding the need to review and update the strategy.

ACTION: Lisa will e-mail the EPO Communication Strategy document to the group for review, and the members will bring comments to the March meeting.

New Mom Campaign-Outreach Status

Dean Effler listed the hospitals where he has distributed (or attempted to distribute) New Mom flyers: Yakima Valley Memorial-Yakima, Sunnyside, Toppenish, Prosser. He noted that Memorial has refused to distribute the flyer because of its reading level ("too difficult"). It was observed that Gretchen Stewart (EPA) is working with PEHSU to develop a simpler "graphic" flyer. Dean also noted he will need additional flyers for distribution.

Proposed Next Steps – March Meeting Topics

- Continue work on the GWAC website update – components and design.
- Notify RCIM of recommendations regarding the Abandoned Well Campaign.
- Submit ideas for the revision of the EPO Communication Strategy document.
- [April] Status of a simpler, "graphic" New Mom flyer (EPA/PEHSU)

Next meeting: Wednesday, March 4, 2015 at 1:30 PM, Yakima County Courthouse Room 419 (phone: 509-574-2353 [PIN# 2353#])

Education and Public Outreach

Charge from Groundwater Management Area Advisory Committee

Review and Report back to the GWAC on Phase 1 High Risk Well Assessment Survey results

Review the GWMA Plan Timeline 1-29-15 and return comments to the GWAC

Working Group Members

Andres Cervantes (GWAC-DOH), Jean Mendoza (GWAC-Friends of Toppenish Creek), Tom Tebb (GWAC-Ecology), Elizabeth Torres (Citizen), Gretchen Stewart (EPA), Nieves Negrete (Citizen), Patricia Newhouse (GWAC-Citizen Rep Position #2), Tom Eaton (GWAC-EPA), Dean Effler (Citizen), Joye Redfield Wilder (Ecology), Stuart Turner (GWAC-Turner & Company), Ignacio Marquez (AGR)

Meetings/Calls Dates

Meeting: Wednesday, March 4, 2015 from 1:30 p.m. to 3:30 p.m.

Participants

Lisa Freund (Chair-Yakima County), Andres Cervantes, *Gretchen Stewart, Lee Murdock (Yakima County), and *Jean Mendoza (*joined call at 2:10 pm*)

*via phone

Key Discussion Points

- **GWMA Web Update**

Lee reported that she recently met with the County's Tech Services Systems Manager and learned that the County will be migrating to a new web program called Civic Plus in four months. This new program changes our initial thoughts about how we will proceed with the website, and what outside resources we will need. For example, with Civic Plus the cost of web development will be covered by the County, rather than coming out of the EPO budget. The County's new program will be based on Windows 365, which will allow document check-in/check-out, a dynamic calendar, and other features the group has been considering. Lee offered to review the specs and bring a list of content decisions to the April EPO meeting.

- **Phase I-High Risk Well Assessment Preliminary Data**

Lisa reviewed the key reasons for this project, noting that the EPO had developed the survey to identify outreach messaging related to health risks and well sampling. The survey was conducted in 2014 by the Yakima Health District; 171 households participated. Lee has reviewed the data results and captured them in the preliminary data document.

Lee observed that the sample size – 171 – was too small to draw meaningful results; however, it did represent the GWMA geographically. She noted the key items we've learned from the surveying were: 1) residents need to test their wells; 2) well owners should become more familiar with their wells (e.g., location of their well log, depth of well, condition of well); 3) the need to explore the possible connection between *not* testing a well and its likelihood of testing high for nitrate.

A member asked if we knew whether the participating properties were owner or tenant occupied. Lee responded that less than 5% were tenant occupied.

The group discussed well testing messaging and developing partnerships with private and public agencies to assist with distributing outreach materials. Gretchen suggested using messaging from a study that took place in Virginia for a well-based community. Could we use their messaging resources to educate our own population? Others suggested exploring Well owner.org and the Ohio Watershed Network/Interpretation Tool for messaging tools.

The group brainstormed ideas for public and private partners to assist with message distribution. The initial list included: the Central Washington Home Builders, Northwest Justice Project, Housing and Health, USDA Rural Home Program, Memorial Hospital's Safe Kids Program and the Memorial Foundation; North Lodge, WIC, CSO, and Aging and Long Term Care. Lee observed that *social service agencies are a ready source to distribute educational information.*

Lisa reminded the group that the EPO had been tasked with responding to the GWAC regarding what we think the survey results mean. The group agreed that the message back to the GWAC is evidence of the lack of understanding about responsible well ownership; a great need for well education, and related to that education, EPO will be reviewing national resources to identify what messages will work here.

The second message to the GWAC (and EPO assignment) is to report back to the well survey participants about their nitrate sampling results. The group agreed that the primary messages to participants are the meaning of their nitrate testing results:

- <5 mg/L = your water is fine; test your well more frequently
- 5-10 mg/L = test your well more often
- 10+ milligrams per liter = consider a treatment system and test your well more often

The group agreed to draft a letter for the GWAC's review and approval at its April meeting.

- **GWMA Plan Timeline 1-29-15**

Line 133-Phase II-High Risk Well Assessment: EPO requests the deadline be moved back to November 2015.

Line 139-predict the likelihood of future problems and conflicts if no action is taken. EPO requests clarification on this item: does it apply to all parts of the work conducted under 2-Problem Identification? Or just domestic well evaluation?

Line 162: EPO requests clarification on where the responsibility lies for Public Outreach Alternatives: is it the EPO's responsibility to provide public messaging?

- **Evaluation of EPO Goals and Objectives Document-December 2012**

Jean presented a preliminary evaluation of the EPO's 2012 goals and objectives document. Lee noted that the GWMA plan was supposed to be completed by 2014: do we need to update our timeline, either as part of the GWMA plan timeline update, or as a stand-alone document? Regarding the proposed evaluation list: we have no means of evaluating or measuring success because the document did not identify outcomes, how we would identify success, or what the purpose of the measures would be. In addition, the outreach plan is the GWAC's document, too: information would need to be collected from the committees for a report out.

While we have no means to evaluate success based on this document, Lee noted we can use it as a report out on accomplishments to date.

Due to lack of time, further discussion was tabled until the April EPO meeting.

Resources Requested

- None

Recommendations for GWAC

- **GWMA Plan Timeline 1-29-15-report back to GWAC:** see requested clarifications
- **Well testing results-report back to GWAC:** the data show a great need for well owners to be familiar with their wells and to test their wells more frequently. EPO is reviewing national resources to identify what will work for our local population.
 - Review and approve a response to survey participants (target date: April)

Deliverables/Products Status

- N/A

Proposed Next Steps

- **Website:** Lee will review the Civic Plus specs and bring a list of content questions back to the EPO at the April meeting.
- **Well testing messaging:** Gretchen will provide a link to the Virginia community study.
 - Lisa will draft a letter to participants for EPO review.

- Education/outreach campaign: Gretchen will solicit volunteers to develop a marketing/targeted outreach campaign (April)
- **GWMA timeline-report back to GWAC:** EPO members are tasked with reviewing the timeline and returning suggestions/additions to Lisa Freund by March 31
- **Outreach Plan Review and Update-**tabled to April 1 meeting

Next meeting: Wednesday, April 1, 2015, from 1:30 p.m.-3:30 p.m., Yakima County Courthouse Rm 419

Livestock/CAFO Working Group

Charge from Groundwater Management Area Advisory Committee

Discussion of data sources and remaining Work Plan Items

Working Group Members

Charlie McKinney, Chair (Department of Ecology), Kirk Cook (Department of Agriculture), Elizabeth Sanchey (Yakama Nation), Jason Sheehan (Dairy Federation), Jim Newhouse (South Yakima Conservation District), Laurie Crowe (South Yakima Conservation District), Sue Wedam (LV Community Rep.), Patricia Newhouse (Citizen), Steve George (Yakima County Farm Bureau), Stuart Turner (Turner & Co., Inc.), Jean Mendoza (Friends of Toppenish Creek), Jim Dyjak (Concerned Citizens of the Yakama reservation)

Meetings/Calls Dates

Meeting: Radio KDNA, 121 Sunnyside Ave, Granger WA 98932

When: Thursday, February 5, 2015 from 5:00-6:30 pm

Call: (509) 574-2353 – Pin #2353

Participants

Charlie McKinney, Sue Wedam, Kirk Cook, Jean Mendoza, Jim Dyjak, Jason Sheehan, Laurie Crowe, Larry Fendell, Ginny Prest, Jim Davenport and Vern Redifer

Key Discussion Points

Welcome & Meeting Overview:

Charlie McKinney welcomed the group and summarized the primary task for the meeting: in light of a change in plans by the dairies under the Agreed Order in terms of lagoon assessment, discuss options for the Work Group in obtaining lagoon leakage information. Also, discuss potential approaches for information on pen and storage areas.

Action follow-up from last committee meeting:

Charlie again contacted Eric Winiecki (EPA) about obtaining data on manure lagoons associated with the dairy cluster in the Lower Yakima Valley. The dairies were required to submit Lagoon Assessment Plans and this data was going to be available to the Work Group. However, Mr. Winiecki reported that the dairies have decided to line all of the lagoons and forgo the assessment step. Therefore, this will not be a source of data for the group.

The group discussed an annotated literature review on manure lagoons that a group member had provided at a previous meeting. It was suggested that a member to go back through the list and identify relevant articles. A couple of other members suggested that we utilize work done as part of the U.C. Davis Nitrate Study. A member suggested we talk directly to scientist involved in the study and that she has had conversations with them previously. Charlie agreed to pull up the several studies on lagoons that Ecology has done as a source of local data. Laurie Crowe will see what information sources she has access to at SYCD.

The need to analyze or estimate the nitrate contribution of pens and manure/compost storage areas was also discussed. Again, the U.C. Davis study was suggested as potential guidance on how to go about obtaining this.

Budget Discussion:

The main remaining potential nitrate sources that need to be addressed per the 2014 Task List is manure lagoons and corrals, pens, and manure storage. The group may ultimately need work done by a consultant however it was agreed that first the group would explore information and data sources to better define the approach and potential needs.

Resources Requested

None at this time. Budget requests may ultimately be submitted.

Recommendations for GWAC

None at this time.

Deliverables/Products Status

Working on developing strategies for assessing lagoons as a nitrate source and for pen and manure storage areas. Budget items for this work and lagoon data interpretation will be submitted.

Proposed Next Steps

Evaluate member's literature review, the U.C Davis nitrate study, lagoon studies done by Ecology, data sources from SYCD, and other sources that come to light to begin formulating the Work Group's plan to address potential sources of nitrate.

Irrigated Ag Working Group (IAWG)

Charge from Groundwater Management Area Advisory Committee

Working Group Members

Jim Trull (Roza-Sunnyside Joint Board of Control), Dr. Troy Peters (WSU), Jean Mendoza (friends of Toppenish Creek), Ralph Fisher (EPA), Ron Cowin (SVID), Stuart Turner (Turner & Co.), Tom Tebb (Department of Ecology), Ginny Prest (Dept. of Ag), Laurie Crowe (South Yakima Conservation District), Dave Fraser (Simplot Agronomist), Scott Stephen (Citizen), Donald Jameson (Citizen), Mike Shuttleworth (Citizen), Chelsea Durfey (Citizen), Doug Simpson (Farmer), Rosalio Brambila (Farm Manager), Vern Redifer, Jim Davenport

Meetings/Calls Dates

Meeting: Sunnyside Valley Irrigation District Office, 120 S. Eleventh Street, Sunnyside

When: February 5, 2015 from 1:30 pm to 3:30 pm.

Call: (509) 574-2353 – Pin # 2353

Participants

Jim Trull (Chair), Jean Mendoza, Doug Simpson, Stuart Turner, Ginny Prest, Laurie Crowe, Jaclyn Hancock, Kirk Cook, Dr. Troy Peters, Scott Stephen, Charlie McKinney, Jim Davenport, Vern Redifer, Frank Lyall, Ralph Fisher*, Nick Peak*, Lisa Freund, Kelly Rae, Greta Smith (Yakima County staff support)

*via telephone

Key Discussion Points

1. **Review of data from 1st Round of Deep Soil Sampling. Deep Soil Sampling, 2/4/15, 2nd Revision**

Jim Trull supplied the latest Revision of Deep Soil Sampling which was reviewed by participants. A member asked if there were six crop categories and it was clarified that there are four categories. Crops are categorized by rooting depths. To assure a broad data base, the fields are to be selected based rooting depth, leaching index, and irrigation application methods. It was also mentioned that commodity prices will change, which will affect nitrogen application and in five to ten years this will affect the data set. Vern explained the layout of his report offering to add additional data (leaching index, depth of the root zone, etc.) as requested.

ACTION: Vern will incorporate the additional information once it is received.

2. **General Observations to present to GWAC**

Jim Trull distributed a handout to the group titled "Observations by Bob Stevens and Troy Peters" and requested comment. It was emphasized that these were observations and not conclusions. A member spoke about the data received and that much improvement will be needed to get better results.

3. Report on the 2nd Round of Deep Soil Sampling

Laurie stated that for the 2nd round of Deep Soil Sampling they are anticipating at least 50 participants and have budgeted for 200 participants over four sampling periods. There will be on-site surveyors who will help complete the grower surveys to ensure better accuracy of data. Testing will start in March. A question was asked regarding analysis of the incoming data. After discussion, the group agreed there is not enough data with the current amount of surveys to perform more detailed analysis but it will take place when sufficient data is gathered.

4. Review and revise the landowner questionnaire to obtain more participation and data

Laurie requested input on the questionnaire. It was determined that Soil Testing and Frequency was left off and should be re-added. There was discussion around sprinkler type and the relevancy to the results. It was determined that the surveyor will circle the applicable sprinkler type used.

ACTION: Laurie will make discussed changes on the questionnaire for the upcoming 2nd Round of Deep Soil Sampling.

5. Status Report on Nutrient Loading Project

Kirk Cook spoke about combining the Deep Soiling Sampling questionnaire with his Nutrient Loading Project. In combining the two they will be able to get more accurate information, the information will be confidential and participants will receive two pesticide credits. This should help entice participants. He believes that 30% of the acreage in the overall GWMA area would be a realistic sampling. Instead of focusing on the number of growers, focus on the number of acres.

ACTION: Kirk will investigate if the pesticide credits can apply to the individuals participating in the Deep Soil Sampling.

6. Collection of data regarding soil nutrient applications

The group discussed how to obtain gross amount of fertilizer sold from vendors in the GWMA area. It was noted that it would be difficult to get good data as there are private vendors and numerous other users from outside of the GWMA area.

Meeting was adjourned at 3:15 pm.

Resources Requested

- N/A

Recommendations for GWAC

- N/A

Deliverables/Products Status

- N/A

Proposed Next Steps

- TBA

Residential, Commercial, Industrial, Municipal (RCIM) Work Group

Charge from Groundwater Management Area Advisory Committee

Working Group Members

Robert Farrell, Chair (Port of Sunnyside), Elizabeth Sanchez (Yakama Nation), Ryan Ibach (Yakima Health District,) Jan Whitefoot (Concerned Citizens of Yakama Reservation,) John Van Wingerden (Port of Sunnyside,) Stuart Turner (Turner & Co.), Tom Ring (Yakama Nation), Kathleen Rogers (Citizen Rep), Sanjay Barik (Ecology,) Dan DeGroot (Yakima Dairy Federation)

Meetings/Calls Dates

Meeting: March 26, 2015 10:00 AM – 12:15 PM

Participants

Present : Robert Farrell, Chair (Port of Sunnyside), Avery Richardson (Department of Ecology), Ryan Ibach (Yakima Health District), Kathleen Rogers (Citizen Rep), Jim Davenport (Yakima County), Dan DeGroot (Yakima Dairy Federation), Lisa Freund (Yakima County), Vern Redifer (Yakima County), Lee Murdock (Yakima County); Yakima County Support Staff – Erica Naasz

Key Discussion Points

- Speaker: Avery Richardson (Ecology) Abandoned Wells and Decommissioned Wells
 - Educational Public Outreach regarding Abandoned and Decommissioned Wells
 - How to locate Abandoned Wells
- GWMA Plan timeline regarding RCIM

Avery Richardson, Ecology hydro-geologist, defined Abandoned and properly Decommissioned Wells and explained the challenges associated with decommissioning wells.

The main reason wells are abandoned rather than properly decommissioned is due to the cost to decommission, which can be up to 50% of the cost to construct a new well. Home owners believe (or state) that they may reuse the well at a later date, or simply do not want to decommission them. Most properly decommissioned wells are a result of land use actions or property owner changes.

A discussion followed regarding available well records and how to conduct online searches for new, decommissioned, or replaced wells.

Avery noted that a couple hundred new wells are drilled each year in Yakima County. Ecology is notified of every new well drilled, excluding the Yakama Nation.

Online searches: Ecology maintains online well drilling records. Pre 2007 records can be searched by section, Township and Range. Post 2007 by parcel search. One cannot search for replacement wells on the Ecology database — one would have to look at all entries.

Avery added that private wells are not permitted per se – however, a Notice of Intent is required, and the property owner must complete the well within thirty days.

The group suggested that one could determine the number of replacement wells by searching new well records and subtracting any known knowledge of other types of wells. The County's aerial records could also be used to identify parcels that had a home on them at one time.

Avery observed that drilling a new well, decommissioning without a license, or sawing the top off to cover up a well is a Class B Felony.

Property owner's fear of litigation was discussed. Avery clarified that Ecology reserves that action for more serious, problematic abandoned wells, e.g., a well that is a threat to the environment or poses potential injury to humans or animals. All in all it is the property owner's responsibility to decommission their well; if the owner states they plan to reuse the well, Ecology cannot act on it.

A member mentioned a possible rumor stating he/she had heard a dairy was putting liquid manure down an old well. Avery concluded that was most likely false information as solids would instantly plug up a well.

Jim Davenport asked the group to quantify how important abandoned wells are to overall nitrogen loading. After lengthy discussion, Jim observed that identifying abandoned wells are a "cart and horse" issue: overall nitrogen loading by source can be best quantified after a groundwater monitoring system is in place.

Education and Public Outreach

A comment was made that raising public awareness is the most important part of the project. Lisa observed that the EPO is prepared to provide the public education. The EPO needs to know who to target and what the messages are.

Vern mentioned when old structures are being torn down it is a requirement of the County to obtain a demolition permit and it is the Counties process to ask the property owners about any old septic systems. However, the only time the planning department would know about an old well or septic is during land segregation.

Jim asked if there is a timeline for Abandoned Wells as the group is to be in compliance with the monitoring program, receiving an answer of, soon.

Avery added that the highest nitrate areas are those related to anhydrous ammonia because it moves through the soil quicker. This is used mostly in wheat, lentil farming, and row crops.

The group discussed grant funding to pay for well decommissioning. Vern observed that grant funders would require us to quantify the problem. Another member suggested finding a small area with high nitrates, complete a thorough investigation of the area, and document the findings to determine a broader area. Vern replied that through the High Risk Well Assessment survey, we

found 30 wells out of 172 that had high nitrates. None of the data gave defining answers to the problem.

GWMA Timeline

The group reviewed the 1-29-15 GWMA Timeline related to RCIM assignments. It was observed that each working group is expected to review the timeline, and provide additions and/or comments back to the GWAC by its April meeting.

- [1. Area Characterization-Define Existing and Future Groundwater Uses-RCIM] the group discussed whether the Area Characterization work was complete. A question was posed regarding who was going to complete this work. Jim Davenport reported that he has collected literature but has yet to receive information from the RCIM.

[2. Problem Definition-Nitrogen Loading Assessment-Septic Systems-Lines 59-60] A broad discussion took place regarding how the RCIM can capture data to measure the amount of nitrogen loading from septic systems. Bob stated that Gordon Kelly, Yakima Health District, had provided information concerning the number of septic systems in its database, dating back to the early 1970's. The number of septic systems is available by Township and range. Bob added that the Data Working Group needs to take this information, along with an estimate of nitrogen loading from each system, to estimate the nitrogen loading to the aquifer from septic systems.

He concluded that it will take significant research time to arrive at a defensible estimate of nitrogen moving out of septic systems.

- Vern suggested that the County has the ability to retrieve number of systems based on residential use on the Assessor's database (GIS.) The loading [from each system] would depend on household size, location, soil, and volume of water draining through the system.
- New time line date May 25, 2015
- [4.3 Develop Nitrogen Loading Estimates for Municipal Underground Injection Control (UIC) Devices-Line 77] This information was already provided to the County (Don Gatchalian).
- Line 83 Residential Fertilizer 3/2/15 - 5/1/15 the group will survey municipal sources and use them as a substitute for residential sources. It was determined that gathering residential data would be extremely difficult; however, information from municipal sources would be easier to collect and could be used as a substitute for residential sources. There is a complex list of potential sources: watering lawns, golf courses, domestic uses, fruit processing centers. Water quantity is only important if being used to make quality better such as diluting.

- When a member asked if this timeline is doable, the answer was “no.” Avery reminded the group to be careful of expectations, that nitrates take time to clean up.

Actions:

- Confirm which members and participates would like to continue to receive emails and/or information regarding meeting.
 - No response will indicate that person is no longer interested in participating.
- Kathleen agreed to contact the Sunnyside City Manager to find out how much fertilizer is applied to municipal locations such as parks, school grounds, and golf courses.
- Kathleen agreed to research data pertaining to discharge from septic systems, given guidelines.
 - Kathleen will bring preliminary data to the RCIM meeting on April 23, 2015 and have final data by May 28, 2015.
- EPO - Abandoned wells – Education and information strategy. Avery suggest a quote such as “If you have an old well, do not cut it down. Call the Department of Ecology.” He also noted that, Lisa F could meet with him to have a public announcement printed in both English and Spanish.
- EPO - The outreach campaign will use existing materials and determine who and where to distribute documents. Potential audiences are farms and fertilizer distributors. Bob will get with Jim Trull to discuss distributing the information through the Sunnyside Valley Irrigation District.

Resources Requested

-

Recommendations for GWAC

-

Deliverables/Products Status

-

Proposed Next Steps

- RCIM Group to review preliminary data researched by Kathleen on April 23, 2015.
- Have final data by May 28, 2015.
- Next RCIM Meeting scheduled for April 23rd 2015.

Data Collection, Characterization, Monitoring Work Group

Charge from Groundwater Management Area Advisory Committee

A discussion of timelines and detail regarding the Nitrate Assessment

Working Group Members

Kirk Cook (Chair); Andres Cervantes; Jan Whitefoot; Jim Trull; Kevin Lindsey; Laurie Crowe; Steve Swope; Stuart Turner; Thomas Tebb; Melanie Redding

Meetings/Calls Dates

Conference Call: 10:00 a.m. to 11:15 a.m., Wednesday, February 25, 2015

Call Number: 509.574.2353 pin: 2353#

Participants

Present: Jim Davenport, Lee Murdock and Vern Redifer

Via Phone: Kirk Cook, Melanie Redding, Jean Mendoza and Andres Cervantes

Other Attendees: Kelly Rae (Yakima County support staff)

Key Discussion Points

Welcome & Meeting Overview

Jim Davenport welcomed the working group. Kirk added an agenda item to the meeting regarding the Timeline that Vern presented to the GWAC and the level of specificity that is required.

There was a discussion on the timeline that Vern provided. A concern was raised that the timeline did not provide much time for groundwater testing and other tasks. Vern clarified that the draft sent out prior to the meeting only showed a portion of the tasks relevant to today's meeting. Vern stated that he would send out the fully expanded project to the committee for their review. He also clarified that the timeline was being sent to all the working groups to provide feedback.

Analysis of CAFO data: Kirk acknowledged that data that the EPA had intended to obtain from dairies (lagoon specific regarding liner leakage, etc.) would be available as producers have agreed to install new lagoon liners. He stated he would like to get lagoon leakage quantification, size, head, soil, veracity, types of soils and utilize Darcy's Law. He explained they would need to discover information from lagoons/CAFOs in similar areas with similar weather. The specific tasks in the timeline related to this included Develop N loading estimate for Livestock properties which includes Corrals and Pens, Storage Areas and Compost Yards, and Lagoons. Kirk suggested that the timelines for these tasks could be

reduced as they will be rechecking dairy logs for existing lagoons to determine the leakage rate. The estimated time was a month and a half as staff would need to go out and verify information provided by the dairy logs and be ready to cite the methodology for GWAC approval. He should have a draft ready by the end of May. Once completed he will forward to Vern and Jim for review.

Vern noted that he needed to add a couple of other tasks to the timeline so that those can also be considered by the other work groups to ensure accountability, transparency, and assurance to the GWAC members that input will be considered prior to crunching numbers.

Grower Survey and Data Synthesis: Kirk spoke about the grower's survey and next steps; stating that they are doing refinements to timelines to look at parcel information and expects progress on where the targets will be. It would be about a month and a half before he would send people in the field to collect data and it should take about a month to two months to complete. His target is to obtain information from owners of at least 33% of each commodity based on acreage. Vern will add this activity to the timeline and stated that while we want to get it done quickly, accuracy is the most important factor.

A member questioned if a problem grower would partake in the survey and the response was that even if we don't get that information, we can still establish a baseline depending on the commodity. This may result in requirements, maybe even County ordinances which would eventually affect the problem grower. Additional benefits of conducting the survey were also supported by information from Laurie Crowe, who told Vern that many of the growers had followed up with her and some were very surprised at the level of nitrates in their soil and wanted to know what to do. The educational piece could have an additional effect on current practices.

Timeline and level specificity: Kirk raised the question whether the N Loading Study should decrease its level of specificity in order to shorten the timeline. Vern said no.

Jean asked about the USGS project that was to be done for the data working group. Kirk suggested that the group consider this as we get closer to the end of the nitrogen assessment. It was made clear that the USGS project would take a couple of years past the point the Deep Soil Sampling would be done. Jean asked if anyone would object to her approaching USGS to see what services are available now. Jean is free to proceed, and is concerned that USGS would need time for preparation. Jean proposed to compose a letter for committee consideration.

Meeting adjourned at 11:15am.

Resources Requested

None at this time.

Recommendations for GWAC

None at this time

Deliverables/Products Status

None at this time

Proposed Next Steps

Regulatory Framework Working Group

Charge from Groundwater Management Area Advisory Committee

Study Session I

Working Group Members

Tom Eaton – Chair (Environmental Protection Agency), Andres Cervantes (Department of Health), Charlie McKinney (Department of Ecology), Chelsea Durfey (Turner and Co.), Dan DeGroot (Yakima Dairy Federation), Jason Sheehan (Yakima Dairy Federation), Jean Mendoza (Friends of Toppenish Creek), Laurie Crowe (South Yakima Conservation District), Nick Peak (Environmental Protection Agency), Vern Redifer (Yakima County Public Services), Ginny Prest (AGR), Jim Dyjak (Concerned Citizens of the Yakama Reservation), Larry Fendell (citizen) and Steve George (Yakima County Farm Bureau)

Meeting/Call Dates

Meeting: Denny Blaine Bldg, 810 East Custer Av, Sunnyside WA
2:00p.m. to 4:15p.m., Thursday, February 19, 2015

Participants

Present: Jim Davenport, Tom Eaton, Charlie McKinney, Jean Mendoza, Landon Schilperoort, Melanie Redding, Sanjay Barik, Larry Fendell, Lee Murdock, Jim Dyjak, Ginny Prest, Laurie Crowe, Eric Winiecki, Wendy Marshall, Steve George, Marie Jennings, Jim Trull, Gordon Kelly, Ryan Ibach, Vern Redifer, Rand Elliott, Patricia Newhouse, David Newhouse, Ginny Stern, Tom Tebb

Other Attendees: Lisa Freund, Erica Naasz, Kelly Rae (Yakima County support staff)

Key Discussion Points

Welcome & Meeting Overview

Introduction, Purposes and Courtesies - Jim Davenport and Tom Eaton

Jim Davenport welcomed the working group.

Tom Eaton, Chair, explained that the County developed a matrix with Federal, State and local ordinances for the three study sessions. Today's session will focus on the State and Federal ordinances. He said that the questions were brainstormed by the working group and then given to the presenters to describe how their regulations work. Tom said the Regulatory working group would reconvene at a later date to assess this study session.

Jim Davenport added that the questions for today's study session were in the attachment with the Agenda and that the dates for two additional study sessions have been scheduled

for April 2 and April 23. He noted that questions would be appropriate throughout the presentations.

Panel 1: Groundwater Management Area (GWMA)– Charlie McKinney

Charlie reviewed Washington Administrative Code (WAC) 173-100 that outlines the GWMA plan development process. Ecology administers area GWMA programs, establishes guidelines and procedures based on geographic areas with problem groundwater.

Charlie stated that the intent is to forge a local partnership that addresses water quality and nitrate contamination. He said that the Groundwater Advisory Committee (GWAC) will develop a process to build an approach and direction that Ecology can support. Yakima County is the lead agency for the GWMA plan development and it will oversee the development, schedule and budget to ensure the program is sound. The final product is to develop a groundwater management program.

Jim D. asked if the GWMA has jurisdiction to enforce the implementation of the GWMA program. Charlie responded that it would be implemented by the State and local agencies. The GWMA will establish a set of recommendations and require that producers and others recognize that we have a problem and that the GWMA wants to be a part of the solution.

A member of the GWAC stated that there are more problems than just nitrates, including adverse health effects and dry wells. The member would like a larger scope of discussion than merely nitrates.

Vern responded that the GWMA will address water quality and that there would be some crossover between quality and quantity. Everything in the WAC pertaining to water quality is intended to be addressed. A member asked if water quantity would be looked at and Vern answered no. He explained that had been considered in the Yakima Basin Integrated Plan.

A powerpoint handout was distributed to the group for the following discussions:

Panel 2: Federal and State Standards and Permits – Environmental Protection Agency

Safe Drinking Water Act, SDWA § 1421 42 USC 300g-1, SDWA § 1431.

Drinking Water Standards presentation by Eric Winiecki, Wendy Marshall and Marie Jennings

The presenters provided an overview of the Safe Drinking Water Act (SDWA). They stated that the EPA does not regulate water systems with less than 15 connections or less than 25 individuals. The standards are regulated by 90 plus chemicals and it is reviewed every six years. They explained that EPA and other agencies do research for contaminants.

The EPA also has secondary standards that are not regulated as the states are not required to adopt them. These secondary standards apply to public water systems that have more than 15 connections or 25 or more people, but these standards do not apply to private

wells. As far as the nitrate standard goes, all systems are required to be monitored except for transient water systems.

Marie explained the 1996 amendment for Source Water and Protection. She stated that not all contaminants can be regulated; however, there is a lot of activity protecting sources of water. The State identifies all sources and potential threats to drinking water to ensure that they are protected.

The EPA, through 106 Funding (\$50k-250m nationally), is in collaboration with other agencies to integrate all tools under the Clean Water Act. The EPA has a vision for all agencies nationally to be working together and combining the regulatory and voluntary rules.

Eric reviewed SDWA Section 1431 that outlines remedial actions that may be ordered. It focuses on underground sources of drinking water.

Questions/Comments:

Is the consent order signed between EPA and the dairies in the dairy cluster pursuant to EPA's administrative authority, or is it a court order. It is entered under EPA's administrative authority.

Jim D. asked what additional tools the EPA would like to have. Eric stated that it would like to have more authority around a program which controls waste.

Is the distance from Seattle to Yakima a problem for the EPA? No.

Are there any injection wells in Yakima County and if so, how many? Unknown.

Jim D. asked who handles a situation where someone may test or think their water is contaminated. The State handles these issues and then follows up as needed.

Is there follow-up? Yes, if needed. The EPA has a good relationship with the State.

How about public vs private? GWMA is dealing mostly with private wells. What is the standard for nitrates in private wells? Standard pertains to public water systems. It is not illegal to have 10ppm in private water systems and there are no requirements to improve them.

What is the standard to someone contributing to nitrates? A GWAC member answered this saying that the EPA defines the standard for public water supply. There is a privacy agreement but regulations define other water supplies. The member further explained that a Class B has less than 15 connections or less than 25 people. Individual, private wells are outside of the public water supply. There are no standards for a private home; however if one is selling or sharing water then you are held to Class A water quality standards.

A member asked about underground injection class 5 wells.

ACTION: Discussion on UICs to be included in next Study Session.

Vern added that the County has hundreds of underground injection wells as a street drainage system. The County has a stormwater permit for discharge, a National Pollution Discharge Elimination System (NPDES) Permit. This will be addressed under the RCIM Working Group. There is a database that identifies all the UCIs in Yakima County.

State Water Pollution Control Act, RCW 90.48, WAC 173-200 by Melanie Redding, WA Department of Ecology

Melanie explained that EPA's authority under the Clean Water Act in Washington State was delegated to the State of Washington. The state accepted the delegation. The RCWs passed give authority to Department of Ecology to adopt groundwater standards, which are different than standards for drinking water. There are several mechanisms/criteria designed so that they don't go over the recommended standards. There is also an anti-degradation policy that protects the quality of water from getting worse. National Pollutant Discharge Elimination System (NPDES) Permits, Stormwater Permits, and Concentrated Animal Feeding Operation (CAFO) Permits are different permits for different types of discharges.

Questions/Comments:

Under the 1996 amendment, Washington State adopted wellhead, surface water and groundwater. It is a misnomer to assume everyone was directed to find contaminants to drinking water. That was a risk management tool. After being in effect for over 20 years, why is Yakima in this situation? The GWMA area is not served primarily by public water systems, but mostly by private wells. The authorities can tell public water systems that they need to treat, give public notification and then compliance orders, but do not have jurisdiction to compel treatment of private wells.

A member asked if the State could trace water for 10 years in Class A systems. The answer was yes.

How large is a well-head protection area? The answer depends upon the elevation/depth of the screened area within the well casing, and the elevation of the aquifer. One would need to look at the risk in the 1-year, 3-year and 5-year interval.

A member commented that the burden to pay was on the taxpayers and EPA agreed. If there is suspected contamination, the EPA will check potential sources and work with the local authorities, take a sampling and then do an investigation. Groundwater standards have provisions for compliance and early warning. The objective is to work in conjunction with the permit or another agency. A discussion followed on the different types of permits to address pollution.

A member advised that the public water systems are identifying different contaminant sources so the agencies have used that as a tool. They added that this makes for pro-active decisions but mostly in urban areas.

How long has public water been monitored? Public water has been monitored since the late 1970s.

Is there success with violation corrections? Yes, for drinking water.

Is treatment the best success? Yes, it has generated clean up action. Some of the clean-up sites have been pesticides, railroads and localized. The EPA aggressively goes after sites under the Model Toxic Control Act.

A member asked if there was an active committee on groundwater. The answer was no.

Clean Water Act, RCW 90.48, (State role under Clean Water Act) by Tom Eaton, EPA

Tom stated that pollution services are regulated. There is a new state water act where EPA is setting the guidelines. The Federal government will take a role to assist the states with grants. This will give a strong role to citizens and will focus on surface water.

The main programs are Water Quality Standards which consists of a lot of scientific research and then the states/tribes adopt those standards subject to EPA approval. Once standards are set, the state is responsible to meet the water standards. The NPDES permitting program is the backbone approach. It applies only to point sources. They are not allowed to discharge pollutants to surface water, and must use Best Available Technology (BAT) to avoid discharge of pollutants. The EPA or state can impose requirements for higher levels of treatment.

The Clean Water Act was amended to address diffused, or "non-point" sources of pollution. The aspect of the Clean Water Act is primarily a funding program. The EPA/State can write compliance orders, file civil suits and seek civil penalties, as can citizens.

State Water Pollution Control Act, RCW 90.48, (State role under Clean Water Act) by Charlie McKinney, WA Department of Ecology

Charlie explained that the Water Pollution Control Act encompasses protection of water in the State and that there are over 80 sections to this act. RCW 90.48 refers to discharges into waters. It gives significant authority to address pollution. DOE accepts and investigates complaints about pollution of both surface water and groundwater. Pollution of surface water is easier to identify than pollution of groundwater. Ecology has the ability to determine if violations have occurred. It posts a "Notice of Violation" if a violation has occurred. Most people are usually very compliant.

ACTION: CAFO permitting will be discussed in the third Study Session.

State Waste Discharge Permits, WAC 173-216 by Sanjay Barik, WA Department of Ecology

State Water Discharge Permits are general permits (14 in Washington State) with the exception of public-owned facilities of at least 5 million gallons a day. There are three facilities: in Yakima, Kennewick and Richland.

Questions/Comments:

How do they identify who needs a permit? There is a threshold of discharge for point sources. Others, like wineries, have a general permit. General permits are issued to similar industries, as it is more efficient. The general permit is based on a volume threshold for discharge, potential threshold for discharge and visual threshold for discharge. Monitoring and monthly reporting is required of permit holders.

How do you know that there is compliance with a general permit? The general permit is less stringent. They are required to submit on a monthly basis to make sure that they are meeting conditions.

Are any legislative changes anticipated this year? Don't expect any major changes.

Will there be well monitoring of wine lagoons? There potentially could be some monitoring.

How is a discharge permit relative to the GWMA? Food processors discharge wastewater which is similar to CAFO. We want to make sure it won't negatively affect groundwater. Facilities could possibly be sources of nitrate.

Jim Davenport asked the group if they had any recommendations on what actions should be taken by the GWMA related to Ecology's work on the CAFO General Permit. Charlie stated that we could zero in on this later in the process. DOE is working on a permit that would provide better groundwater protection. The department plans to do listening/stakeholder meetings soon.

A member asked if the monitoring of groundwater had been happening since 1938. The Department of Ecology was not created until the 1970's; however, prior to Ecology, there may have been different industries doing the monitoring. Charlie added that there is a centralized database (a lot still in paper files). He is not sure if everything has been entered electronically. The data could be suspect. Ecology is trying to get a handle on better data. They are mostly focused on surface water and do not have an ambient groundwater program.

Is the NPDES program effective? Yes.

Is there more pollutant from non-NPDES holders? It was recommended that the GWMA not focus on the NPDES. Potential sources should be looked at more closely.

If the NPDES and General State Permit are not effective, how do you permit if there's no regulatory authority?

ACTION: The GWMA Program will contain a chapter on the Regulatory Environment within the Ground Water Management Area.

Meeting adjourned at 4:10p.m.

Resources Requested

None at this time

Recommendations for GWAC

None at this time

Deliverables/Products Status

None at this time

Proposed Next Steps

Evaluate whether study session approach is the best approach. Prepare for study sessions II (April 2, 2015) and III (April 23, 2015)

Regulatory Framework Working Group

Charge from Groundwater Management Area Advisory Committee

[Insert Charge]

Working Group Members

Tom Eaton – Chair (Environmental Protection Agency), Andres Cervantes (Department of Health), Charlie McKinney (Department of Ecology), Chelsea Durfey (Turner and Co.), Dan DeGroot (Yakima Dairy Federation), Ginny Prest (AGR), Jason Sheehan (Yakima Dairy Federation), Jean Mendoza (Friends of Toppenish Creek), Laurie Crowe (South Yakima Conservation District) Nick Peak (Environmental Protection Agency), Vern Redifer (Yakima County Public Services), Jim Dyjak (Concerned Citizens of the Yakama Reservation), Larry Fendell (citizen) and Steve George (Yakima County Farm Bureau)

Meetings/Calls Dates

Conference Call: 3:00p.m. To 4:13p.m., Thursday 26, 2015

Call Number: 866.299.3188 CODE #3607539437

Participants

Present: Tom Eaton (Chair), Andy Cervantes, Charlie McKinney, Jean Mendoza, Jim Davenport, Larry Fendell, Vern Redifer, Dan DeGroot, Jim Dyjak

Other Attendees: Lisa Freund, Erica Naasz (Yakima County Support Staff)

Key Discussion Points

- The purpose of this conference call was to discuss the first Regulatory Framework Working Group Study Session held on February 19, 2015. Jim reminded the members that he has sent out a draft for the next two study sessions.
- Tom thought that the first session went well; we were able to receive information, capture results, and get a complete picture for later discussions. Jim stated he has written a chapter on regulatory structure. He will make the draft available for members who take notes at these study sessions so they can incorporate their notes into the chapter. In the meantime anyone who took notes or has a copy of their presentation was directed to send them to Lisa F.

A broad discussion followed. Tom suggested that the agenda is in fact too crammed to discuss each law and we will need more sessions. A member also brought up Vern's timeline, stating we cannot make it within the suggested timeframe of July. Vern stated the timeline is a reflection of what he has seen and what is planned. He also added that

he was a little disappointed in the first session, feeling that the presenters did present the laws but the questions [they were provided in advance of the session] were not answered. He added that this was likely due to the broad subjects and time limits.

Another member expressed frustration that the law(s) were not investigated or analyzed in the study session. The speakers did not address enforcement. Jim Davenport pointed out the intention to lay down the fundamentals, then analyze whether the regulatory structure is sufficient. Charlie McKinney agreed, noting that analysis will take place when the group starts focusing in on specific laws that regulate nitrate. Tom Eaton observed that the EPA did report on enforcement actions. Additional discussion took place around time, presenters, cost, the laws and concern about how (if) the laws are being implemented and if they are making a difference. Member also suggested regulations they wanted discussed at future sessions.

- Jim asked the members what they would like to see at the next sessions. Requests included providing session information a week in advance so members have more time to process the material. A round table seating approach was also suggested as well as more microphones. Jim requested that the members suggest relevant legal authority for consideration of discussion. The members were asked to list their priority topics and submit to him within two weeks, sending a copy to Tom as well. Jim and Tom will then prioritize the list and make a proposal as to how to move forward.
- Jim observed that based on today's discussion, the second study session may not be ready by April 2.

Resources Requested

-

Recommendations for GWAC

-

Deliverables/Products Status

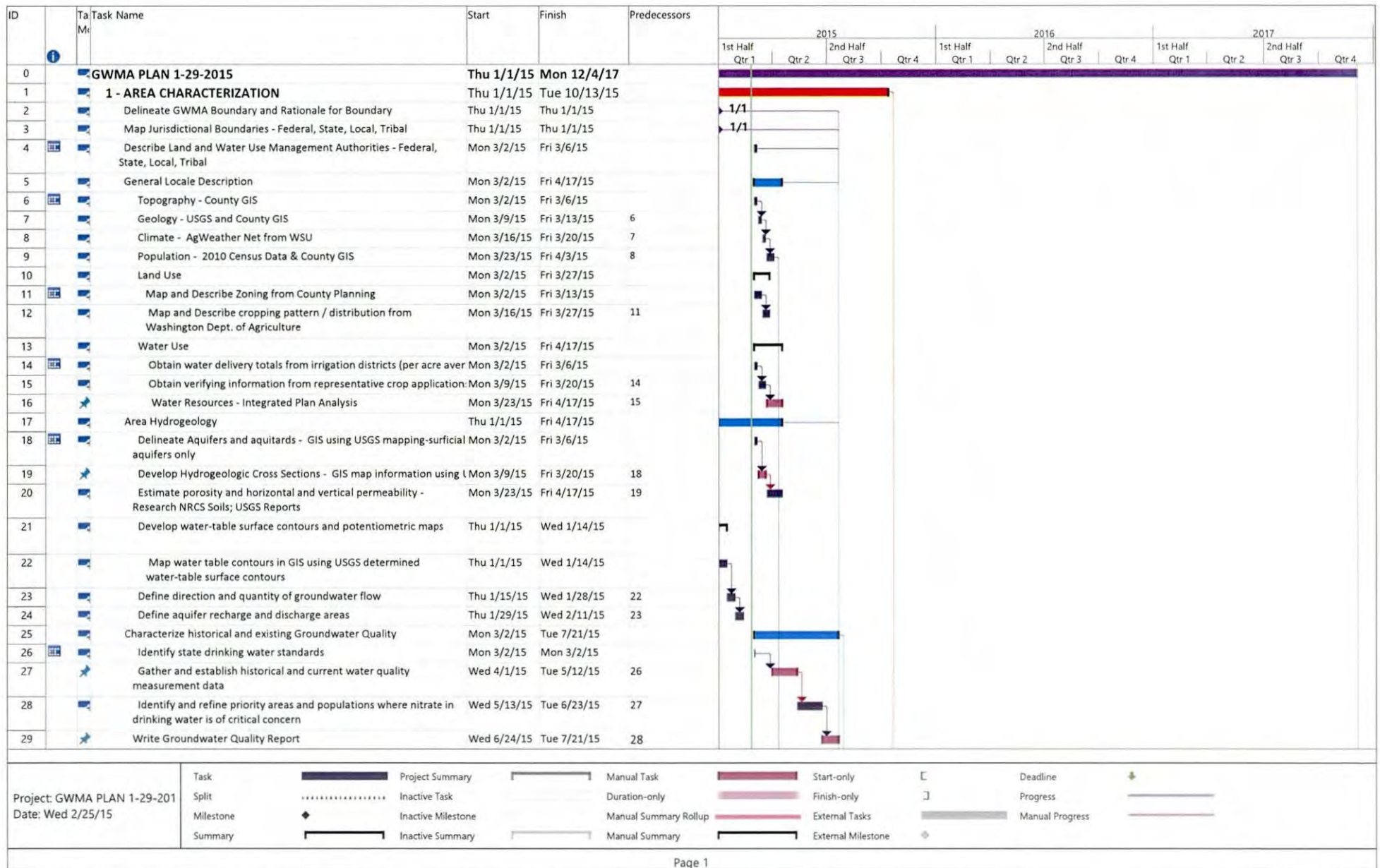
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Proposed Next Steps

- Send study session presentations and/or notes to Lisa Freund
- Send priority topics for the upcoming study sessions to Jim Davenport (cc Tom Eaton) within the next two weeks.

Attachment B

- The Ground Water Management Plan Timeline
- Round One Deep Soil Sampling Data Report
- Deep Soil Sampling Plan Questionnaire (Revised)



ID	Task Name	Start	Finish	Predecessors	2015				2016				2017			
					1st Half Qtr 1	2nd Half Qtr 2	2nd Half Qtr 3	2nd Half Qtr 4	1st Half Qtr 1	2nd Half Qtr 2	2nd Half Qtr 3	2nd Half Qtr 4	1st Half Qtr 1	2nd Half Qtr 2	2nd Half Qtr 3	2nd Half Qtr 4
30	Define existing and future groundwater uses	Wed 4/1/15	Tue 4/21/15													
31	RCIM	Wed 4/1/15	Tue 4/7/15													
32	Irrigated Agriculture	Wed 4/8/15	Tue 4/14/15	31												
33	Livestock/CAFO	Wed 4/15/15	Tue 4/21/15	32												
34	Document all References	Wed 7/22/15	Tue 8/18/15	2,3,4,5,17,25,30												
35	Prepare Area Characterization Report	Wed 8/19/15	Tue 10/13/15	34												
36	2 - PROBLEM DEFINITION	Thu 1/1/15	Mon 1/2/17													
37	DEEP SOIL SAMPLING PROJECT	Thu 1/1/15	Mon 8/29/16													
38	Deep Soil Sampling Phase 1	Thu 1/1/15	Thu 2/5/15													
39	Conduct Survey and Sampling	Thu 1/1/15	Thu 1/1/15													
40	Report Results of Phase 1	Fri 1/2/15	Thu 2/5/15	39												
41	Deep Soil Sampling Phase 2	Fri 2/6/15	Thu 7/2/15													
42	Conduct Survey and Sampling	Fri 2/6/15	Thu 5/28/15	38												
43	Report Results of Phase 2	Fri 5/29/15	Thu 7/2/15	42												
44	Preliminary Evaluation of results of Phase 1 and 2	Fri 7/3/15	Thu 7/16/15	43,39												
45	Deep Soil Sampling Phase 3	Tue 9/1/15	Mon 1/4/16													
46	Conduct Survey and Sampling	Tue 9/1/15	Mon 11/9/15													
47	Report Results of Phase 3	Tue 11/10/15	Mon 1/4/16	46												
48	Deep Soil Sampling Phase 4	Tue 2/9/16	Mon 7/4/16													
49	Conduct Survey and Sampling	Tue 2/9/16	Mon 5/30/16													
50	Report Results of Phase 4	Tue 5/31/16	Mon 7/4/16	49												
51	Final Evaluation of Results of Phases 1, 2, 3, and 4	Tue 7/5/16	Mon 8/15/16	44,48,50												
52	Final Report of DSS Project	Tue 8/16/16	Mon 8/29/16	51												
53	NITROGEN LOADING ASSESSMENT DATABASE PROJECT - evaluate current land use management practices suspected of contributing to groundwater loading of organic and inorganic nitrogen	Thu 1/1/15	Mon 1/2/17													
54	3.0 Develop a Comprehensive Nitrogen Source Database	Thu 1/1/15	Fri 3/27/15													
55	Task 3.1 Evaluate current and planned data sources to determine necessary database fields	Thu 1/1/15	Thu 1/1/15													
56	Develop a GIS linkage structure	Thu 1/1/15	Thu 1/1/15													
57	Submit for review to the County, and the Data, RCIM, IA, and Livestock/CAFO working groups	Mon 3/2/15	Fri 3/27/15	55,56												
58	3.3 Populate database with data collected as a result of grower surveys, estimates for various land uses associated with residential, commercial, industrial, and municipal sources, and data collected from on-site	Thu 1/1/15	Mon 1/2/17													

Project: GWMA PLAN 1-29-201
Date: Wed 2/25/15

Task

Split

Milestone

Summary

Project Summary

Inactive Task

Inactive Milestone

Inactive Summary

Manual Task

Duration-only

Manual Summary Rollup

Manual Summary

Start-only

Finish-only

External Tasks

External Milestone

Deadline

Progress

Manual Progress

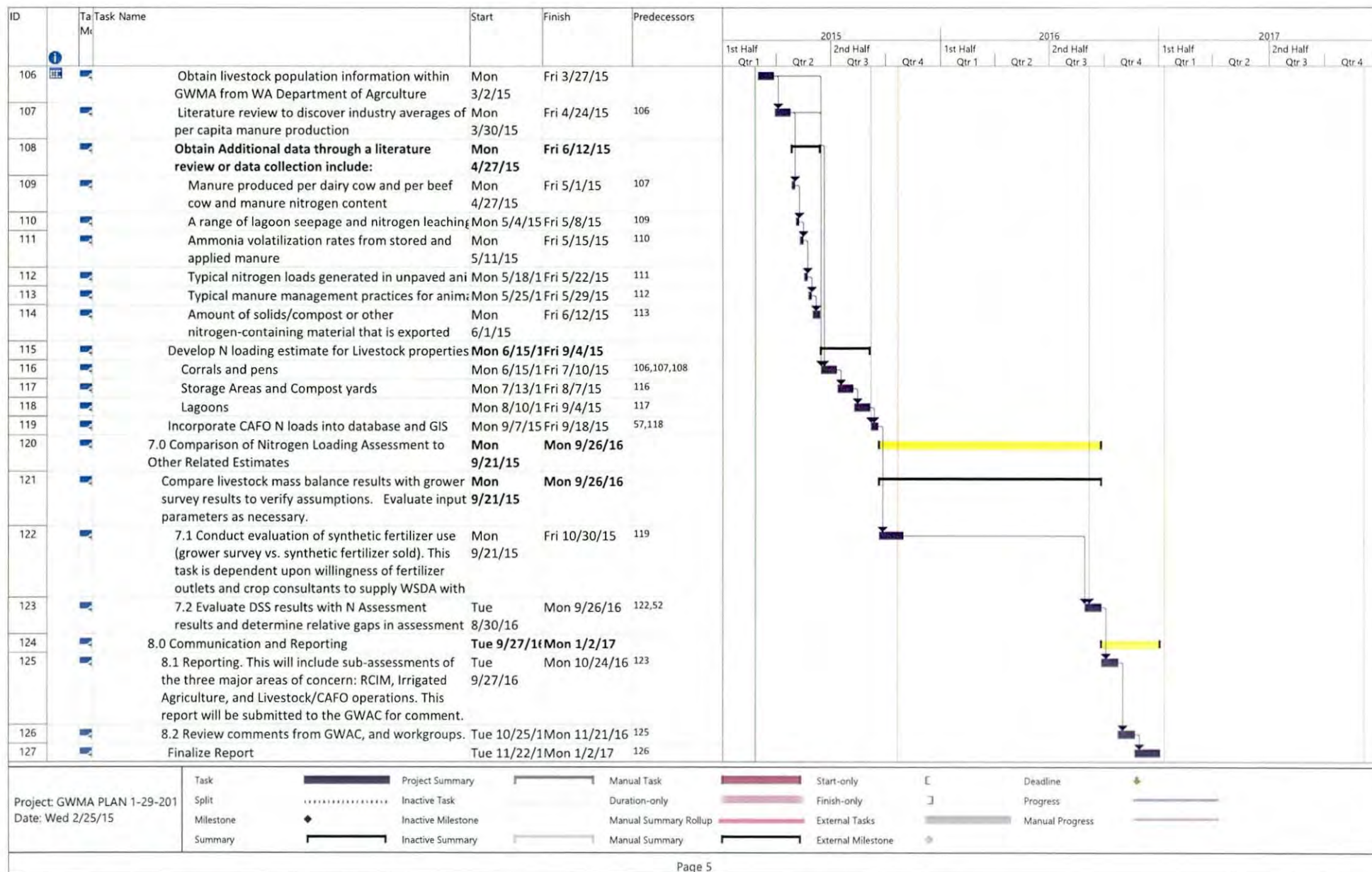
Page 2

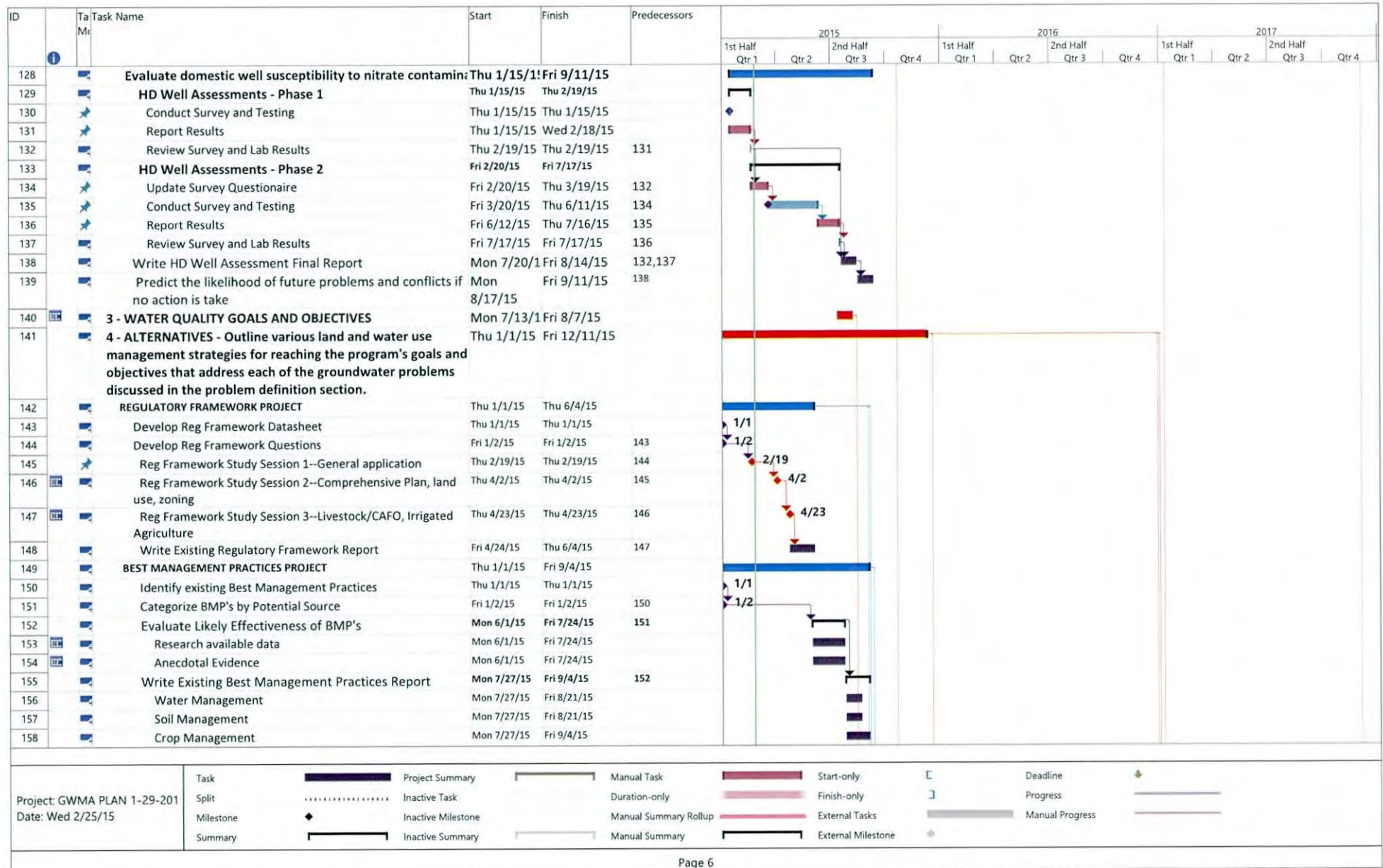


ID	Task Name	Start	Finish	Predecessors	2015				2016				2017										
					1st Half Qtr 1	Qtr 2	2nd Half Qtr 3	Qtr 4	1st Half Qtr 1	Qtr 2	2nd Half Qtr 3	Qtr 4	1st Half Qtr 1	Qtr 2	2nd Half Qtr 3	Qtr 4							
86	Research Local homeowner practices	Mon 3/2/15	Fri 3/20/15																				
87	Research Recommended Fertilizer Practices	Mon 3/23/15	Fri 4/10/15	86																			
88	Incorporate Residential Fertilizer loads into database and GIS	Mon 4/27/15	Fri 5/1/15	85,84																			
89	Incorporate N loads into database and GIS	Mon 5/4/15	Fri 5/8/15	57,83																			
90	5.0 IRRIGATED AGRICULTURE - Assemble data analysis for Irrig. Ag elements and produce estimated N loading in both database and GIS formats	Thu 1/1/15	Fri 4/17/15																				
91	Identify Irrigated Ag Locations and attributes by Parcel using County GIS and 2013 WSDA crop map.	Thu 1/1/15	Wed 1/21/15																				
92	Crop Type	Thu 1/1/15	Wed 1/7/15																				
93	Soil Type	Thu 1/8/15	Wed 1/14/15	92																			
94	Irrigation Type	Thu 1/15/15	Wed 1/21/15	93																			
95	5.3 Develop crop specific and basin wide NO3 loss estimation.	Thu 1/1/15	Fri 4/10/15																				
96	Method 1 - Use County specific crop use, irrigation method, and fertilizer databases.	Mon 3/2/15	Fri 4/10/15																				
97	Method 2 Gather Information from a voluntary grower questionnaire that will report site-specific information regarding nitrogen application and removal over several growing cycles.	Mon 3/2/15	Fri 4/3/15																				
100	Method 3 - Collect Information through a series of group interviews/surveys with local crop consultants and agronomists.	Thu 1/1/15	Wed 3/25/15																				
101	Incorporate Irrigated Ag N loads into database and GIS	Mon 4/13/15	Fri 4/17/15	57,95																			
102	6.0 LIVESTOCK - Assemble data analysis for Livestock elements and produce estimated N loading in both database and GIS formats.	Mon 3/2/15	Fri 9/18/15																				
103	Identify Livestock Locations and attributes by Parcel using County GIS	Mon 3/2/15	Fri 3/27/15																				
104	6.1 Conduct literature review to assemble peer reviewed data on lagoon leakage rates, regional nitrogen content of manure from dairy and beef cattle, required manure handling activities on facility	Mon 3/2/15	Fri 4/10/15																				
105	6.2 Conduct evaluation of manure generation using latest livestock population data, evaluate 3rd party application, develop lagoon leakage rates, evaluate soil testing results and evaluate manure export	Mon 3/2/15	Fri 6/12/15																				

Project: GWMA PLAN 1-29-2015
Date: Wed 2/25/15

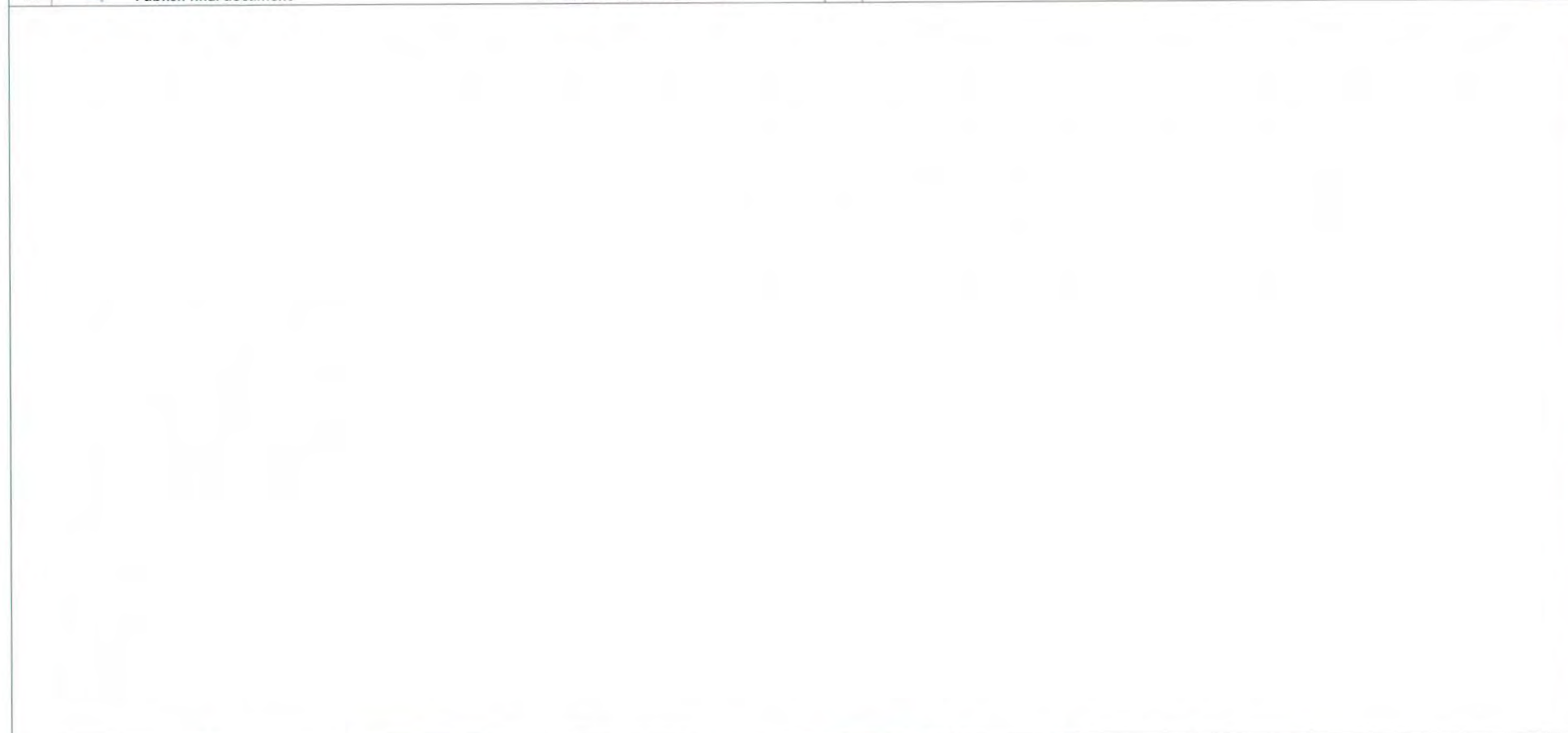
Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	







ID	Ta Mc	Task Name	Start	Finish	Predecessors												
						2015				2016				2017			
						1st Half Qtr 1	Qtr 2	2nd Half Qtr 3	Qtr 4	1st Half Qtr 1	Qtr 2	2nd Half Qtr 3	Qtr 4	1st Half Qtr 1	Qtr 2	2nd Half Qtr 3	Qtr 4
189		Write Implementation chapter	Tue 8/15/17	Mon 9/11/17	175												
190		Publish draft document	Tue 9/12/17	Mon 10/23/17	184,185,186,187,1												
191		Publish final document	Tue 10/24/17	Mon 12/4/17	190												



Project: GWMA PLAN 1-29-201
Date: Wed 2/25/15

Task		Project Summary		Manual Task		Start-only		Deadline	
Split		Inactive Task		Duration-only		Finish-only		Progress	
Milestone		Inactive Milestone		Manual Summary Rollup		External Tasks		Manual Progress	
Summary		Inactive Summary		Manual Summary		External Milestone			

LOWER YAKIMA VALLEY
GROUNDWATER
ADVISORY
COMMITTEE

GROUNDWATER
ADVISORY
COMMITTEE

Deep Soil Sampling

Grower	Field #	Soil Sampling Results NO3 (#N/ACRE)							NH4-N	ORGANIC	NRCS SOIL TYPE
		1 ft	2 ft	3 ft	4 ft	5 ft	6 ft	TOTAL			
1001	1001-0-5	8	3	3	3	5	3	25	28	1.87	18 - Cleman Very Fine Sandy Loam 0-2% Slopes
1002	1002-0-2	285	124	115				524	11	2.4	121 - Scoon Silt Loam 5-8% Slopes
1004	1004-0-5	177	79	63	69	42	50	480	16	2.06	178 - Warden Silt Loam 5-8% Slopes
1005	1005-0-5	25	3	3	3	3	4	41	20	2.21	177 - Warden Silt Loam 2-5% Slopes
1006	1006-0-5	45	4	3	3	4	3	62	20	2.17	179 - Warden Silt Loam 8-15% Slopes
1007	1007-0-3	3	3	3	3			12	8	1.09	179 - Warden Silt Loam 8-15% Slopes
1008	1008-0-3	246	73	14	3			336	37	1.39	10 - Burke Silt Loam 2-5% Slopes
1009	1009-0-3	12	3	40	81			136	10	1.64	177 - Warden Silt Loam 2-5% Slopes
1010	1010-0-2	50	112	6				168	17	1.47	178 - Warden Silt Loam 5-8% Slopes
1011	1011-0-5	57	141	295	269	93	50	905	40	3.18	179 - Warden Silt Loam 8-15% Slopes
1012	1012-0-2	53	60	102				215	9	3.06	179 - Warden Silt Loam 8-15% Slopes
1013	1013-0-3	68	9	4	6			87	30	3.09	178 - Warden Silt Loam 5-8% Slopes
1015	1015-0-5	271	125	266	97	94	77	930	18	2.26	95 - Quincy Loamy Fine Sand 0-10% Slopes
1016	1016-0-5	94	19	27	36	73	124	373	16	1.71	172 - Warden Fine Sandy Loam 0-2% Slopes
1017	1017-0-5	133	14	12	14	20	9	202	11	1.52	171 - Wanser Loamy Fine Sand
1018	1018-0-5	155	55	32	35	52	100	429	10	1.64	95 - Quincy Loamy Fine Sand 0-10% Slopes
1019	1019-0-5	10	7	4	5	9	27	62	9	1.29	95 - Quincy Loamy Fine Sand 0-10% Slopes
1020	1020-0-5	93	276	208	78	38	23	716	23	2.32	173 - Warden Fine Sandy Loam 2-5% Slopes
1021	1021-0-5	315	33	99	17	40	15	519	23	2.15	172 - Warden Fine Sandy Loam 0-2% Slopes
1022	1022-0-5	16	10	17	15	21	33	112	11	1.53	57 - Hezel Loamy Fine Sand 0-2% Slopes
1023	1023-0-5	28	53	152	81	59	66	439	11	1.19	95 - Quincy Loamy Fine Sand 0-10% Slopes
1024	1024-0-5	22	21	19	34	121	57	274	19	2.4	95 - Quincy Loamy Fine Sand 0-10% Slopes
1025	1025-0-5	215	18	13	4	32	4	286	8	1.34	95 - Quincy Loamy Fine Sand 0-10% Slopes
1026	1026-0-5	314	10	7	7	7	3	348	22	1.33	172 - Warden Fine Sandy Loam 0-2% Slopes
1027	1027-0-5	115	121	99	67	114	66	582	23	1.94	171 - Wanser Loamy Fine Sand
1028	1028-0-5	11	3	3	3	3	3	26	16	1.39	143 - Starbuck-Rock Outcrop Complex 0-45% Slopes
1029	1029-0-5	8	3	11	4	3	3	32	10	1.17	177 - Warden Silt Loam 2-5% Slopes
1030	1030-1-5	113	57	8	6	7	6	197	31	2.86	66 - Kittitas Silt Loam
1031	1031-0-2	568	601	760				1929	12	2.34	177 - Warden Silt Loam 2-5% Slopes
1032	1032-0-1	50	268					318	19	2.28	177 - Warden Silt Loam 2-5% Slopes
1033	1033-0-1	110	28					138	25	2.96	177 - Warden Silt Loam 2-5% Slopes
1034	1034-0-1	285	55					340	17	2.62	177 - Warden Silt Loam 2-5% Slopes

Deep Soil Sampling Plan Questionnaire

WORKSHEET FOR IRRIGATED CROPLAND

Bar Code (Place Bar Code Here)

Date: _____

Field History

Years Owned/Farmed _____

Soil Type (if know): _____

Currently Soil Testing ☐ Yes ☐ No

Number of Acres: _____

Current Crop Year: _____ Crop _____

Crop condition: ☐ Poor ☐ Fair ☐ Good

Tons/Bushels/Acre (circle one) _____ actual or planned (circle one)

Tillage Practices for Crop Cycle:

Cropping History (Include Double Cropping)

Crop Rotation:

YR _____ Crop 1 _____ Tons/Bushels/Acre _____; Crop 2 _____ Tons/Bushels/Acre _____

YR _____ Crop 1 _____ Tons/Bushels/Acre _____; Crop 2 _____ Tons/Bushels/Acre _____

YR _____ Crop 1 _____ Tons/Bushels/Acre _____; Crop 2 _____ Tons/Bushels/Acre _____

Current Method of Irrigation Scheduling:

_____ ET; _____ Soil Moisture Sensors; _____ Routine _____ hr. sets; Weather Stations _____

Current Irrigation System:

How Old Is System? _____

_____ Rill/Surface Irrigation (Flood, Border)

_____ Sprinklers (Pivot, Linear Move, Wheel-line, Hand-line, Solid Set)

_____ Drip (Tube, Tape, Buried Line, Above Ground Line)

_____ Other: _____

Previous Irrigation System:

_____ Rill/Surface Irrigation (Flood, Border)

_____ Sprinklers (Pivot, Linear Move, Wheel-line, Hand-line, Solid Set)

_____ Drip (Tube, Tape, Buried Line, Above Ground Line)

_____ Other: _____

Deep Soil Sampling Plan Questionnaire

Nitrogen Applications

Year	Liquid Manure #N/1000 Gallons	Solid Manure #N/Ton	Commercial #N/Acre Applied	Biosolids #N/Ton	Compost #N/Ton	Other #/Ton	Hours to Incorporate	How Applied
Current								
Last Year								
2 years ago								
3 years ago								

Please provide additional information if appropriate such as split applications, starter, side dress, etc. _____

Comments: _____

Attachment C

- Amendment to Agreement between Yakima County and Radio KDNA for Conference Room Rentals
- Interlocal Agreement between Washington State Department of Agriculture and Yakima County to Develop a Comprehensive Nitrogen Loading Assessment for the Lower Valley Groundwater Management Area

Amendment to Agreement between Yakima County and Radio KDNA

This Amendment is to a previously executed agreement between Yakima County Public Services (County), acting on behalf of the Lower Yakima Valley Groundwater Management Area Committee and Radio KDNA; and is for the continued rent by the County of conference rooms at Radio KDNA's Granger location.

WHEREAS, the County and Radio KDNA signed an original agreement on January 23, 2014 for the use of Radio KDNA's conference rooms and other amenities containing mutually negotiated terms and conditions, including terms for payment of rent by the County at established rates until December 31, 2014; and.

WHEREAS, the County and Radio KDNA have mutually agreed to extend the duration of that agreement for another year under the same terms and conditions as mutually negotiated and agreed to in the original 2014 agreement;

NOW THEREFORE, the County and Radio KDNA hereby mutually agree to amend the January 23, 2014 Agreement to extend the County's ability to use Radio KDNA's conference rooms for an additional year, until December 31, 2015, and at the same established rate and under the same terms, conditions and obligations as agreed upon in the prior agreement between the parties.

(Agreement name & number)

Done THIS 20th DAY OF January 2015

RADIO KDNA, GRANGER, WA

Signature: _____

Name: _____

Title: _____

Date: _____

BOARD OF YAKIMA COUNTY
COMMISSIONERS

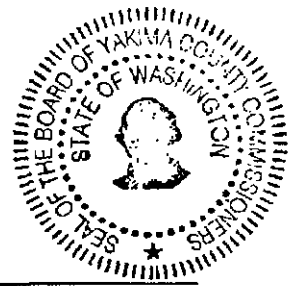
J. Rand Elliott, Chairman

Michael D. Leita, Commissioner

Kevin Bouchey, Commissioner
Constituting the Board of County
Commissioners for Yakima County, Washington

BOCC10-2015
January 20, 2015

Agreement for Meeting Room Services



Tiera L. Gerard

Attest: Tiera L. Gerard
Clerk of the Board

Approved as to form:

[Signature]

Deputy Prosecuting Attorney

**INTERLOCAL AGREEMENT
BETWEEN
WASHINGTON STATE DEPARTMENT OF AGRICULTURE
AND
YAKIMA COUNTY**

THIS AGREEMENT is made and entered into between Yakima County, hereinafter referred to as the "COUNTY", and the WASHINGTON STATE DEPARTMENT OF AGRICULTURE, hereinafter referred to as the "WSDA", pursuant to RCW Chapter 39.34 – The Interlocal Cooperation Act, and is entered into by the COUNTY and WSDA for the following purpose and on the following terms:

1. **PURPOSE.** The purpose of this Agreement is to provide funds to the WSDA from Ecology's grant to develop a Comprehensive Nitrogen Loading Assessment for the Lower Yakima Valley Groundwater Management Area (PROJECT) to support the development of the Groundwater Management Program as set forth in WAC 173-100.
2. **PROJECT.** The WSDA agrees to do all work and furnish materials necessary for performing the work in accordance with this Agreement. The WSDA will provide the necessary resources for performing such work as set forth in the Scope of Work and Budget (Attachment "A").
3. **REVIEW AND CONCURRENCE.** The WSDA agrees to a review process whereby execution of the work elements contained in the Scope of Work identified in Attachment "A" will be presented to pertinent "Work Groups" of the Lower Yakima Groundwater Management Area's Groundwater Advisory Committee for review. Comments received by the Chairperson acting on behalf of each pertinent "Work Group" will be addressed and if necessary acted upon prior to commencing work on each element.
4. **PERIOD OF PERFORMANCE.** Subject to its other provisions, the period of performance of this Agreement shall commence on February 10, 2015, and be completed on or before, December 31, 2015 unless terminated sooner as provided herein. Upon agreement by both parties, the completion date may be extended by up to two four week periods commencing on January 1, 2016.
5. **PAYMENT.** Compensation for the work will be based on successful completion of tasks and deliverables identified in Attachment "A". The parties have determined that the cost of accomplishing the work herein is estimated at not to exceed amount of \$45,000.00. Payment for satisfactory performance of the work shall not exceed this amount unless the parties mutually agree in writing to a higher amount.
6. **BILLING PROCEDURE.** The WSDA shall submit properly completed invoices using the necessary forms to the COUNTY monthly, or as agreed upon by COUNTY and WSDA. WSDA will submit billings to the COUNTY in three periods June 15, 2015, October 15, 2015 and upon completion of the project.
7. **AMENDMENTS.** This Agreement contains all terms and conditions agreed upon by all

parties. No change or addition to this Agreement shall be valid or binding upon either party unless such change or addition is in writing and executed by both parties. All terms of the attached Attachment "A" are incorporated herein by this reference.

8. **INDEPENDENT CONTRACTOR.** The parties agree that, for purposes of this Agreement, the WSDA or any employees of the WSDA act as independent contractors, are not considered employees of the COUNTY, and are not entitled to any benefits that the COUNTY provides its employees.
9. **PROFESSIONAL STANDARDS.** The WSDA shall perform the Services according to the standard of care ordinarily exercised under similar conditions by similarly qualified professionals who are currently practicing in the area where WSDA is located.
10. **INDEPENDENT CAPACITY.** The employees or agents of each party who are engaged in the performance of this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party.
11. **TERMINATION.** The parties may terminate this Agreement, with or without cause, by written notice from either party to the other party thirty (30) days in advance of the termination. In the event of termination, the amount of compensation shall be for services rendered through the termination date.
12. **DISPUTE RESOLUTION.** In the event of a dispute between the Parties regarding their respective rights and obligations pursuant to this Agreement, the disputing Parties shall first attempt to resolve the dispute by negotiation. If a dispute is not resolved by negotiation, the alternative dispute resolution process shall be utilized either by mediation or arbitration.
13. **GOVERNING LAW AND VENUE.** This Agreement shall be governed by the laws of the state of Washington. Venue for any action or proceeding shall be in the Superior Court of Yakima COUNTY.
14. **ASSIGNMENT.** The work to be provided under this Agreement, and any claim arising thereunder, is not assignable or delegable by either party in whole or in part, without the express prior written consent of the other party, which consent shall not be unreasonable withheld.
15. **INSURANCE.** Each Party shall obtain and maintain in full force and effect for the term of this Agreement, at its own expense, comprehensive general liability and automobile insurance policies for bodily injury, to include death and property damage, including coverage for owned, hired or non-owned vehicles, as applicable, for the protection of the Party, its elected and appointed officials, officers, agents, employees and volunteers. The policies shall be primary policies, issued by a company authorized to do business in the State of Washington, or in City or County Risk Pool and providing single limit general liability coverage of \$2,000,000 and separate automobile coverage of \$1,000,000 or the limit of liability contained in State law, whichever is greater. If either party is unable to obtain insurance as required by this paragraph, the Parties shall cooperate on amending this Section to require types and levels of insurance that are available. The certificates shall provide that the other Parties will receive thirty (30) days written notice of cancellation or material modification of the insurance contract at the address listed below. Each Party shall provide certificates of insurance to the other Parties prior to the performance of any obligation under

this agreement. If requested, complete copies of insurance policies shall be provided to the other Parties. Each Party shall be financially responsible for their own deductibles, self-insurance retentions, self-insurance, or uninsured risks.

16. **INDEMNIFICATION/HOLD HARMLESS.** The WSDA shall defend, indemnify and hold the COUNTY, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or resulting from the acts, errors or omissions of the WSDA in performance of this Agreement, except for injuries and damages caused by the sole negligence of the COUNTY. Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the WSDA and the COUNTY, its officers, officials, employees, and volunteers, the WSDA liability, including the duty and cost to defend, hereunder shall be only to the extent of the WSDA negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the WSDA'S waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Agreement.
17. **LIMITATION OF LIABILITY.** All actions or proceedings are barred three years after the COUNTY knew or should have known of any claim or damage, or five years after substantial completion of the Services, whichever occurs first.
18. **ATTORNEY'S FEES.** If any legal action or proceeding is commenced relating to this Agreement, the prevailing party is entitled to recover its reasonable attorneys' fees and costs.
19. **INTEGRATION.** This Agreement contains all of the terms and conditions agreed on by the parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement, are deemed to exist or to bind either of the parties.
20. **SEVERABILITY.** If a court of competent jurisdiction holds any part, term or provision of this Agreement illegal, or invalid in whole or in part, the validity of the remaining provisions shall not be affected, and the parties' rights and obligations shall be construed and enforced as if the Agreement did not contain the particular provision held invalid.

If any provision of this Agreement is in direct conflict with any statutory provision of the State of Washington, that provision which may conflict shall be deemed inoperative and null and void insofar as it may conflict, and shall be deemed modified to conform to such statutory provision.
21. **WAIVER.** The waiver by either party of any term or condition of this Agreement shall not operate in any way as a waiver of any other condition, obligation or term or prevent either party from enforcing such provision.
22. **COMPLETE AGREEMENT.** This Agreement constitutes the complete and final understanding between the parties and may be amended by the prior written consent of both parties.
23. **SURVIVAL.** The provisions of this Agreement shall survive its termination and completion

of Services.

24. **NONDISCRIMINATION.** The WSDA agrees that it shall not discriminate against any person on the grounds of race, creed, color, religion, national origin, sex, sexual orientation, age, marital status, political affiliation or belief, or the presence of any sensory, mental or physical handicap in violation of the Washington State Law Against Discrimination (RCW chapter 49.60) or the Americans with Disabilities Act (42 U.S.C. 12101 et seq.) or any other applicable state, federal or local law, rule or regulation.
25. **ASSIGNMENT.** The WSDA shall not assign or subcontract any portion of the contracted activities without obtaining prior written approval from the COUNTY. WSDA contemplates enlisting the assistance of the National Agricultural Statistics Service to conduct a survey of growers as to their use of manure and commercial fertilizer. This data will be used to supplement that collected through the deep soil sampling project. Funding for this survey will be paid using current agency funding and will not require any additional monies via the contract.
26. **CONTRACT ADMINISTRATION.** Unless otherwise stated herein, all notices and demands are required in written form and sent to the parties at their addresses as follows:

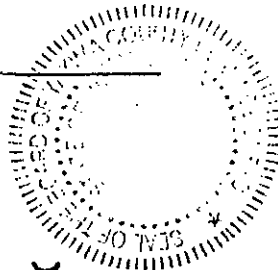
TO WASHINGTON STATE DEPARTMENT OF AGRICULTURE:
 PO Box 42560
 Olympia, WA 98504-2560

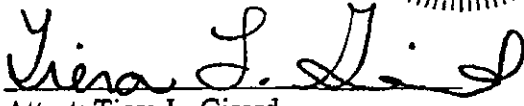
TO YAKIMA COUNTY:
 Vern M. Redifer, PE
 Public Services Director
 128 North Second
 Street Yakima, WA
 98901 (509) 574-2300

DONE this 31st day of March, 2015

WASHINGTON STATE DEPARTMENT OF
AGRICULTURE

BOARD OF YAKIMA COUNTY COMMISSIONERS

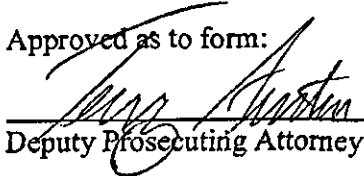




Attest: Tiera L. Girard
Clerk of the Board

BOCC100-2015
March 31, 2015

Approved as to form:



Deputy Prosecuting Attorney



J. Rand Elliott, Chairman



Michael D. Leita, Commissioner



Kevin J. Bouchey, Commissioner
*Constituting the Board of County Commissioners
for Yakima County, Washington*

LOWER YAKIMA VALLEY

GROUNDWATER
ADVISORY
COMMITTEE

Groundwater
Management Area
(GWMA)

**Comprehensive Nitrogen Loading
Assessment for the Lower Yakima
Valley Groundwater Management Area –
Scope of Work and Budget**

Version 1.2a

December 3, 2014

Comprehensive Nitrogen Loading Assessment for the Lower Yakima Valley Groundwater Management Area – Scope of Work

Project Management

WSDA Lead:

Kirk V. Cook, LG, LHG

Mr. Cook has over 35 years of experience with the US Geological Survey, the Washington State Departments of Health and Ecology, and current oversees the Washington Department of Agriculture's Natural Resource Assessment Section comprised of 10 research staff with expertise in environmental toxicology, pesticide use, hydrogeology, water resource management, GIS application science, environmental engineering, water quality and water resource modeling, endangered species protection, and agricultural science. Combined experience and education of section staff exceeds 80 years.

1.0 Purpose

The goal of the Lower Yakima Groundwater Management Area is to reduce nitrate contaminations in groundwater below state drinking water standards. Within the boundaries of the Lower Yakima Groundwater Management Area exists areas where the state drinking water standard for nitrate (10mg/L) has been exceeded for years. This area has supported a variety of agricultural practices for over 100 years. Many of these practices have required the use of nitrogen fertilizers and nutrients (both organic and inorganic) or where nutrient rich effluent has been allowed to enter the soil column via permitted or otherwise sanctioned activities. These applications are suspected to have contributed to the elevated levels of nitrate in groundwater currently used as drinking water supplies. In order to determine to what extent the application of nitrogen has contributed to the elevated nitrate levels in groundwater, it is necessary to evaluate current land use management practices suspected of contributing to groundwater loading of organic and inorganic nitrogen. This is necessary to determine the activities contributing and to what degree that contribution may be impacting groundwater quality.

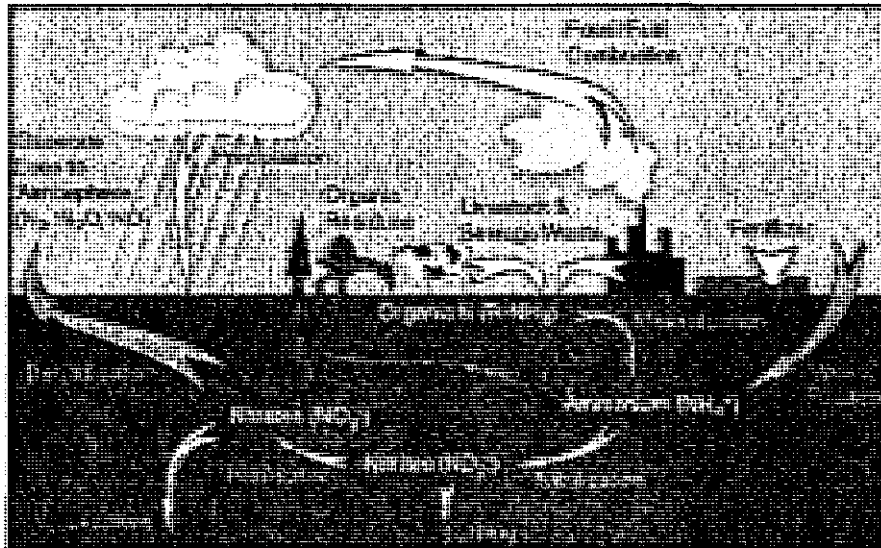


Figure One: Factors to be considered during the assessment of nitrogen loading and relationship to groundwater quality

The Nitrogen Loading Assessment is a mass-balance model. These models are the simplest models employed by researchers. These models have value in that they are able to predict mass flux in a generalized sense and do assist in estimating loading rates from various land uses and estimating input rates and concentrations for transport modeling. The limitation on these types of models is that they cannot be used to predict solute concentration at any single point in time or space. The Nitrogen Loading Assessment will provide the information necessary to evaluate the nitrate contribution from various sectors

within the boundaries of the GWMA and will provide information loading estimates to crop management / livestock management, and activities associated with residential, commercial, industrial and municipal activities. These estimates are necessary to evaluate the spatial loading of vulnerable groundwater within the Groundwater Management Area boundaries (which can result in elevated nitrate levels in drinking water), the effectiveness of current management practices in limiting that loading, and if necessary, provide a basis for implementation of new or expanded practices that may be required to achieve the goals of the GWMA.

Establishing a relationship between nitrogen loading to land surface and underlying water quality requires an understanding of, the factors influencing the degree to which that nitrogen is used by crops, lost to the atmosphere, or modified as it passes through the soil column. This assessment will utilize a combination of peer reviewed scientifically derived estimates applicable to the Yakima Valley in combination with specific land use management data collected through the Deep Soil Sampling project and supplemented by targeted data collection activities conducted by WSDA, Yakima County, the Washington Departments of Ecology and Health.

2.0 Overall Concept

The Nitrogen Loading Assessment is a cooperative project between Yakima County and The WA Department of Agriculture. The goal of the Assessment will be to develop a mass balance for nitrogen usage within the GWMA. In achieving this goal, assessments of specific activities conducting both permitted and non-permitted nitrogen application will be developed and will provide data on which to base both land use recommendations within the Groundwater Management Area Plan and educational materials for use by residents within the GWMA. The results will provide focus on those modifications in land management or facility operations that have the greatest potential to reduce or eliminate excess nitrogen loading to the land surface which ultimately result in excessive nitrate leaching to underground sources of drinking water.

The assessment, in addition to accessing the degree to which current land management activities may be impacting groundwater quality, will provide data (in conjunction with the Deep Soil Sampling Project) regarding the extent to which current groundwater quality is being impacted by historic nitrogen management techniques.

The assessment of nitrogen loading and loss will be divided into two sub-activities. One for irrigated and livestock agriculture, the other for residential, commercial, industrial municipal activities. WSDA will have primary responsibility for the assessment of irrigated and livestock activities, Yakima County will focus on assessment of residential, commercial, industrial, and municipal activities. These two areas of interest will be addressed in the application of the following overriding equation:

$$NLGW = RL + BL + IACF + IAOF + CAFOPP + AL$$

Where

- NLGW = nitrogen load to groundwater, which assumes that all nitrogen present below the root zone will become nitrate and either be denitrified or leach to groundwater.
- RL = nitrogen loading to groundwater from residential sources including septic tanks, lawn fertilization, and onsite septic systems
- BL = nitrogen loading to groundwater from sites with municipal biosolids, and municipal and industrial wastewater (under State Waste Discharge Permits, or NPDES permits)
- IACF = nitrogen loading to groundwater from irrigated agriculture land use where chemical fertilizers are applied and further discussed below
- IAOF = nitrogen loading to groundwater from irrigated agriculture land use where organic fertilizers (e.g., manure) are applied

• CAFOPP = nitrogen loading to groundwater from livestock pond and pen sources this will include such activities as lagoon operations, composting activities, feeding and milking areas

• AL = nitrogen loading to groundwater from atmospheric deposition. Local values from national atmospheric monitoring data sets will be used and applied evenly across the GWMA.

Note: Where appropriate denitrification will be factored into the overall sector contribution for the equation above. As specified in Sections 4 thru 6 below, denitrification will (when appropriate) will be applied to the original nitrate load as calculated or estimated in the respective source category.

3.0 Development of Comprehensive Nitrogen Source Database

In order to adequately evaluate the effects of nitrogen application for the majority of land uses within the GWMA boundaries, it will be necessary to develop a database or GIS linkage capable of housing application and management data from a wide variety of source specific information collected using differing methodologies. Some database fields will be similar for all sources, whereas other data fields will be source-specific, and it will be designed so that it will be expandable and able to include additional fields. Data collected for the major sectors identified by the GWAC will be clearly identifiable within the data so that analysis can be conducted on a sector by sector basis if desired. Most data fields will be identified during the initial creation of the database or GIS linkage, though some will likely be added as management practices change or updated information becomes available. WSDA and Yakima County have taken steps toward the development of a GIS linkage structure. This structure will be submitted for review to the County, and the Data, RCIM, IA, and Livestock/CAFO working groups prior to entering source data into it. This review will apply to the final draft report and will exclude any trial or developmental runs of the database). The database will include numeric fields to support calculations, as well as fields necessary for display within the GIS environment. Three main tasks are associated with this activity; data evaluation prior to database development in order to develop necessary fields and evaluate the utility of a single database or two separate databases linked to operate as one, development of database structure, and database population.

Task 3.1 Evaluate current and planned data sources to determine necessary database fields¹

Estimated Budget 100 hours @ 26.00/hr \$ 2600.00

Task 3.2 Develop comprehensive database for all nitrogen sources covered by RCIM, Irrigated Agriculture, and Livestock Agriculture. Database will be developed using Access from which a geodatabase will be created for use within the ESRI environment.

Estimated Budget 100 hours @ 35.00/hr \$ 3500.00

Task 3.3 Population of database with data collected as a result of grower surveys, estimates for various land uses associated with residential, commercial, industrial, and municipal sources, and data collected from on-site livestock operations.

¹ Data quality will be guided by a developed QA/QC plan, some of which currently exists within documents produced by PGG for environmental data collection.

Estimated Budget 80 hours @ 26.00/hr

\$ 2080.00

Total Budget for Task 3.0

\$ 8180.00

4.0 Residential, Commercial, Industrial, and Municipal Assessment

Yakima County will be the lead for assessing the overall nitrogen loading that occurs as a result of activities associated with RCIM activities. This will include assessment of septic systems, state waste discharge permits (Ecology), underground injection well contribution, and hobby farm activities. WSDA will provide technical assistance to Yakima County regarding application of various methodologies applied to the parcels to estimate N loading. WSDA will also assist the County by facilitating the involvement of technical experts currently working for cooperating state and federal agencies, or consultants.

Residential and Municipal Septic Systems and other Residential Sources

Parcel data from Yakima County will be used by the County to identify parcels where residential septic systems are present. Septic loads from each parcel will be calculated assuming an average sized household in Yakima County (based on census data), consultation with Yakima County, WA Department of Ecology and the Washington State Department of Health. In estimating daily septage volumes and nitrogen loads per person, WSDA will utilize a septic system leaching model developed by the Environmental Assessment Program at the Department of Ecology. Model developers will assist WSDA in its application. These data sources and assessment methodology will be referenced in the final report. Prior to employing these sources/references, project leader(s) will consult the Monitoring and Data Work Group for review and comment.

If a large on-site septic system (LOSS) is designed to enhance denitrification and that design is identifiable in WDOH or Ecology records, the enhanced denitrification rate will be considered.

In addition to septic loads, other residential nitrogen sources such as fertilization of lawns and gardens will be examined. Information on fertilization practices and the percent of homeowners who actively fertilize will be pursued and the data most representative of LYV (given geography, environment, and socio-economic factors) will be used for this project. If local data are unavailable, regionally recommended fertilization practices and data will be reviewed to estimate nitrogen loading due to lawn fertilization. These data currently exist in peer reviewed documents published by the University of California-Davis, and other research institutions. Existing data sources (GIS coverage's, aerial photographs, and previous reports) will be reviewed to assess the most feasible way to quantify local lawn areas. City parks and golf courses with their associated fertilization rates will be included in this analysis.

Currently Regulated RCIM Activities

Sites for which there exists a State Waste Discharge Permit (discharging to the ground) will be identified based on Department of Ecology online records. These permits include mandated limits for nitrogen discharge to underlying groundwater. Additionally the locations of municipal Underground Injection Control (UIC) devices will be obtained from the online Ecology UIC database and local municipalities to identify features that may act as conduits allowing surface water (and potentially contaminants within it) to more easily enter groundwater. All sites will be entered into the database but sites used for groundwater calculations will be limited to those with potential to impact groundwater based on consultation with the Department of Ecology. Location and source data will be entered into the nitrogen source database so that nitrogen loading rates can be estimated. Facilities that are potential nitrogen sources and are not regulated under NPDES/State Waste Discharge Permits (such as large onsite septic systems, biosolid application areas, or com-posting facilities) will also be reviewed, with relevant data obtained from Ecology the Washington State Department of Health, and Yakima County for inclusion in the nitrogen source database.

Other potential sources of nitrogen from residential land use include pet waste and hobby farms/livestock nutrients. Regional or literature values will be used to estimate nitrogen loads associated with pet and hobby-farm livestock nutrient management. Prior to use of any regional or literature values, the Monitoring and Data Work Group will be consulted.

Assessment of RCIM nitrogen loads will require a minimum of field work and data collection, therefore the budget does not reflect an allocation for field data collection.

- | | |
|----------|--|
| Task 4.1 | Analysis of septic system N loading using existing parcel data and database |
| | <i>Estimated Budget 90 hours @ 30.00/hr \$ 2700.00</i> |
| Task 4.2 | Identify and analyze N loading from permitted land application sites. This task will be coordinated with the Washington State Department of Ecology. |
| | <i>Estimated Budget 30 hours @ 30.00/hr \$ 900.00</i> |
| Task 4.3 | Develop N loading estimates from municipal Underground Injection Control devices. This will include analysis of stormwater management structures, but will not include an assessment of potentially existing UIC's nor will there be an attempt to identify UIC not currently noted in Ecology's UIC database. |
| | <i>Estimated Budget 60 hours @ 30.00/hr \$ 1800.00</i> |
| Task 4.4 | Develop N loading estimates from hobby farm operations. This task will require coordination with WSDA and CD's within the GWMA. Typical N |

loading for pasture parcels will be developed by WSDA and CD's and applied to existing parcel database. Loading estimates due to application for lawn and garden uses will be captured in this Task.

Estimated Budget 60 hours @ 30.00/hr \$ 1800.00

Task 4.5 Assemble data analysis for RCIM elements and produce estimated N loading in both database and GIS formats.

Estimated Budget 60 hours @ 30.00/hr \$ 1800.00

Total Budget for Task 4.0 \$ 9000.00

5.0 Irrigated Agriculture Source Quantification

Data for the irrigated agriculture nitrogen loading assessment will be collected using three different methods:

- 1) County specific crop use, irrigation method, and fertilizer databases

- 2) Information gathered from a voluntary grower questionnaire that will report site-specific information regarding nitrogen application and removal over several growing cycles and
- 3) Information collected through a series of group interviews/surveys with local crop consultants and agronomists.

Because collection of the deep soil survey data set may take up to two years as part of the GWMA's Deep Soil Sampling program, WSDA has developed a GIS layer based on recommended fertilizer application from published crop-specific growing manuals. This will be used as an initial baseline and modified as additional information collected from grower surveys (from DSS project) and group interviews becomes available². As the representative set of grower surveys increase in numbers they will be compiled and calculations will be updated using that additional site specific data.

Nitrogen application and removal rates will be evaluated to estimate nitrogen excess or deficiency for groups of crop, soil, fertilization, irrigation, and removal combinations. This evaluation will be conducted by a group of qualified agronomists selected by WSDA for their expertise in nitrogen behavior and local expertise. Fields contained within the operational boundaries of livestock operations and upon which manure is applied will be evaluated using the same process as outlined below for irrigated agriculture fields using manure, chemical fertilizer, or combination of chemical fertilizer and manure. Excess nitrogen determined through the evaluation will be assumed to be available for leaching to groundwater. The 2013 WSDA field-specific crop distribution map will then be used as a platform to allocate nitrogen loading across the GWMA based on crop acreage and growing areas. This process will identify a long-term nitrogen balance consistent with current (and recent historical) practices which is not dependent on irrigation or weather (these factors mostly affect timing of nitrate percolation which is not addressed in this analysis).

Use of Grower Survey Data

WSDA will use data collected from voluntary grower surveys that will provide detailed information regarding nitrogen application and loss over several growing cycles. WSDA will conduct an assessment as to the statistical validity of the surveys as compared to the total number of crop specific parcels. Coordination with the National Agricultural Statistics Service (NASS) will be sought to determine at which level statistical validity will occur. This will be completed prior to assessment of the N loading for irrigated crop lands.

² WSDA has developed a contingency explained in Section 9 that can be used to supplement data collection in the event that the number of grower surveys completed are insufficient to provide a statically valid population on which to conduct the analysis.

Survey data from a representative sample of the major crops grown in the GWMA boundaries will be analyzed and a typical application/loss determination made for each major crop or livestock activity. Using the 2013 WSDA crop distribution map those typical results would be allocated across the GWMA based on acreage for each crop and/or activity and determination made as to excess or deficient of nitrogen available for leaching to groundwater across the GWMA or in smaller sub-areas as deemed necessary. Based on these results targeted Best Management Practices and educational products can be selected or developed to address those areas, crops, or activities that are determined to contribute to nitrate loading to shallow groundwater.

WSDA, is aware that a sufficient number of surveys may not be received to allow for extrapolation of typical use of nitrogen for each major crop within the boundaries of the GWMA. To address this potential "issue", WSDA will conduct a series of group interviews for growers, consultants, and agronomists to collect data regarding nitrogen timing, application amount, irrigation, etc. This process will mimic that used in the collection of pesticide use data that WSDA has implemented since 2002 with good results. This data combined with that received from grower surveys should provide for an adequate population to conduct the necessary analysis. Depending upon the number of these "meetings" that are considered necessary; the budget estimate may vary by \$1000.00 to \$2,000.00 this activity.

General

The following equation will be used to estimate nitrate loading to groundwater from irrigated agricultural fields:

$$\text{Nitrogen load to ground water} = (\text{Nitrogen input} - \text{Nitrogen removed by cropping}) * (1 - \text{denitrification fraction})$$

For crops that fix nitrogen (legumes such as alfalfa and peas), either a fixation term will be included in the nitrogen input term or a calculation using a leached concentration and recharge volume will be used to calculate loading (as performed in other studies), depending on data availability.

Use of the above equation requires the following assumptions and limitations:

- All nitrogen not consumed by the crop and removed will become nitrate
- Excess nitrate is denitrified in the vadose zone or leaches to groundwater
- Input and results are not variable over time and can be approximated with average annual values
- Removal of nitrogen from a field via runoff or tile drainage is negligible

Task 5.1	Develop spreadsheet of grower survey results including estimates of N application, irrigation amounts and timing, biomass removal, crop type, etc.	
	<i>Estimated Budget</i>	<i>50 hours @ 55.00/hr</i> <i>\$ 2750.00</i>
Task 5.2	Conduct statistical analyses of survey populations, and analyze spreadsheet data as to major influences.	
	<i>Estimated Budget</i>	<i>30 hours @ 55.00/hr</i> <i>\$ 1655.00</i>
Task 5.3	Develop crop specific and basin wide NO3 loss estimation, this includes analysis of all survey and published data, working with agronomists to determine crop uptake and N removal from "non-fertilizer" activities. An estimation of total nitrogen budget for each major crop will be develop and rolled into a basin wide estimation following the equation contained in Section 2.0 of this scope.	
	<i>Estimated Budget</i>	<i>280 hours @ 55.00/hr</i> <i>\$ 15400.00</i>
	Total Budget for Task 5.0	\$ 19805.00
	Revised Budget to Include Grower Meetings	\$21805.00

6.0 Livestock Sources Quantification

Evaluation of N loading from livestock sources will be confined to those areas under the jurisdiction of WSDA (Dairy) or under permit by Ecology as a Confined Animal Feeding Operation³. Movement of manure off these designated facilities on to cropland will be

³ Data collected as a result of US EPA's consent order with four dairies will be considered as appropriate and where QA/QC requirements meet federal data collection protocols

captured under the assessment for irrigated agriculture. Nitrogen sources from livestock are divided into two categories, and will focus on dairy and CAFO operational lands:

- Lagoons, feeding and milking pens on unpaved surfaces, composting facilities, manure storage areas, liquid (stormwater) storage areas
- Other possible sources (ditches and pipelines between lagoons and solids separators, and silage leachate)

Agricultural areas where manure is spread to grow a crop will be covered under the irrigated agriculture chapter

Existing data from WSDA and Ecology will be evaluated and may include number of animals per facility, lagoon size, manure storage system, and animal yard size. Required data for this analysis is the current number of head per facility.

Additional data that will be obtained through a literature review or data collection include:

- Manure produced per dairy cow and per beef cow and manure nitrogen content
- A range of lagoon seepage and nitrogen leaching rates
- Ammonia volatilization rates from stored and applied manure
- Typical nitrogen loads generated in unpaved animal yards
- Typical manure management practices for animal yards
- Amount of solids/compost or other nitrogen-containing material that is exported from the GWMA

One meeting is planned with the Livestock/CAFO working group to review and receive feedback regarding "typical" management practices and implemented BMPs within the LYV. Potential nitrogen sources and sinks on local CAFOs will also be discussed as an exercise to identify potentially overlooked nitrogen sources or sinks.

Published data and work group feedback will be compiled and analyzed to define typical management practices for livestock facilities. Nitrogen mass balances will be calculated based on the number of cows per facility and type of facility (dairy vs beef), typical manure management and storage practices, calculated lagoon/pond leaching rates, expected loading rates from pens, manure removed from the facility for land application or other uses, denitrification, and other quantifiable nitrogen sources/sinks. Nitrogen mass balance results will be allocated across the GWMA at dairy and CAFO facilities. The following equation will be used as a basis for calculating a livestock N loading mass balance:

(Number of cows x Manure generated per cow x Nitrogen content of manure) = Nitrogen leached from storage ponds + Nitrogen leached from unpaved animal yards + Nitrogen removed for local land application + Nitrogen exported from the GWMA as compost or in other forms + Nitrogen lost to volatilization + Nitrogen lost to denitrification

The use of this equation assumes that:

- Input and results are not variable over time and can be approximated with average annual values
- On an average annual basis, all manure and nutrients generated on a livestock operation will be removed, leached, or volatilized (i.e. long-term storage of manure does not occur)
- All major nitrogen sources/sinks for a given livestock are identified in the equation

Data collected within the area referred to as the "dairy cluster" will be evaluated for use in the N evaluation provided that acceptable QA/QC requirements are met (data collected using federal data collection protocols will be considered acceptable).

Task 6.1 Conduct literature review to assemble peer reviewed data on lagoon leakage rates, regional nitrogen content of manure from dairy and beef cattle, required manure handling activities on facility sites. Coordinate with EPA regarding "lagoon" data collected from "Dairy Cluster".

Estimated Budget 30 hours @ 26.00/hr \$ 780.00

Task 6.2 Conduct evaluation of manure generation using latest livestock population data, evaluate 3rd party application, develop lagoon leakage rates, evaluate soil testing results and evaluate manure export activities.

Estimated Budget 90 hours @ 45.00/hr \$ 4050.00

Task 6.3 Develop N loading estimate for designated dairy and CAFO properties

Estimated Budget 35 hours @ 45.00/hr \$ 1575.00

Total Estimated Budget Task 6.0 \$ 6405.00

7.0 Comparison of Nitrogen Loading Assessment to Other Related Estimates

Quality Assurance/Quality Control evaluations are proposed to check assumptions and parameters used in the Nitrogen Loading Assessment. These activities include:

Task 8.1 Develop draft report on nitrogen loading and loss for the Lower Yakima Valley Groundwater Management Area. This will include sub-assessments of the three major areas of concern: RCIM, Irrigated Agriculture, and Livestock/CAFO operations. This report will be submitted to the GWAC for comment. This will be a cooperative effort between WSDA and Yakima County

Task 8.2 Review comments from GWAC, and workgroups. This item includes up to four single or joint meetings with workgroups to consider comments, and will conclude with the presentation of a final report on N loading in the Lower Yakima Valley. This will be a cooperative effort between WSDA and Yakima County

Total Estimated Budget Task 8.0 **\$ 7650.00**

and the need to establish a N loading baseline, WSDA and Yakima County will contribute significant staff resources not funded by GWMA monies to ensure the timely completion of the project.