

# Task Order for Professional Engineering Services

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**To:** Brandon Tomlinson  
General Manager  
Chowchilla Water District

**From:** John B. Davids, P.E.  
Davids Engineering, Inc.

**Date:** 09/19/2022

**Project name:** Chowchilla Subbasin GSP Annual Reports

**Project #:** 1183.05

**Task name:** Water Year 2022 GSP Annual Report

**Task order #:** 01

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Davids Engineering, Inc. (DE or CONSULTANT) is pleased to provide this proposal to Chowchilla Water District (CLIENT) to assist the Groundwater Sustainability Agencies (GSAs) in the Chowchilla Subbasin with the development of the Groundwater Sustainability Plan (GSP) Annual Report for water year 2022 (October 2021 through September 2022). Pursuant to the Task Order Agreement for Professional Services between CLIENT and CONSULTANT dated 09/19/2022 CLIENT desires and CONSULTANT agrees to perform the professional services according to the following terms.

## 1 Task Order Overview and Objective

According to the GSP regulations, as outlined in 23 CCR §356.2, Annual Reports must be prepared and submitted to DWR by April 1 of each year following the adoption of the GSP. The next GSP Annual Report is required to be submitted by April 1, 2023. This scope of work will prepare the Chowchilla Subbasin GSP Annual Report for water year 2022 (October 2021 through September 2022) in compliance with all of the requirements of 23 CCR §356.2. This effort will require analyses and data for each GSA (e.g., surface water use by a particular GSA), as well as analyses for the entire Chowchilla Subbasin (e.g., estimating the change in groundwater storage). The GSP Annual Report will provide the following general information about the Chowchilla Subbasin, in addition to supporting technical information required by 23 CCR §356.2:

- Groundwater elevation data from monitoring wells
- Hydrographs of groundwater elevations
- Total groundwater extractions for the prior water year
- Surface water supply used or available for use in the prior water year, including for groundwater recharge or other in-lieu uses
- Change in groundwater storage
- Progress towards implementing the GSP

## 2 Task Order Approach

This scope and budget assumes that the approach and content of the GSP Annual Reports prepared to date are deemed adequate by DWR and that no substantial changes to the analyses and reporting are required, pending DWR review and feedback on the GSP Annual Reports.

The following tasks provide a general description of what information will be provided in the Annual Report and the work that will be performed to complete the Annual Report. The Annual Report provided to DWR will fully comply with the requirements of 23 CCR §356.2, and will be submitted by the April 1, 2023, deadline.

## 3 Task Order Description

### 3.1 Scope of Services

The scope of services to be performed by the DE-LSCE Team is organized into seven tasks, as described below:

#### **Task 1. Prepare General Information, Including an Executive Summary and a Map of the Chowchilla Subbasin Location.**

General information provided in the Annual Report will include an executive summary that highlights the key content of the Annual Report. This content will include a description of the Chowchilla Subbasin sustainability goals and provide a concise description of the annual groundwater conditions and water budget components, GSP projects and management actions implemented, progress towards interim milestones, an updated implementation schedule, and a map of the Chowchilla Subbasin. Any important changes or updates with regard to water use, the basin setting, or information supporting the measurable objectives, minimum thresholds, and undesirable results defined in the GSP will be noted and described.

#### **Task 2. Prepare a Detailed Description and Graphical Representation of Groundwater Conditions and Water Budget Components Managed in the Chowchilla Subbasin.**

For this task, a complete water budget of the GSP area is necessary and will be completed to describe the annual groundwater conditions and water budget components required in the Annual Report. The subtasks are budgeted to complete a full Chowchilla Subbasin water budget for water year 2022 for the GSP Annual Report.

##### ***Subtask 2.1. Develop groundwater elevation data, including groundwater elevations for Representative Monitoring Sites (RMS) included in the GSP monitoring network.***

###### ***Subtask 2.1.1. Develop groundwater elevation contour maps.***

Groundwater elevation contour maps will be prepared for each principal aquifer for seasonal high (Spring 2022) and low (Fall 2021) conditions during water year 2022 using data from RMS wells in conjunction with consideration of any supplemental groundwater elevation data available from other (non-GSP) monitoring programs.

###### ***Subtask 2.1.2. Develop hydrographs of groundwater elevations and water year type.***

Hydrographs from January 1, 2015, through water year 2022 will be prepared for available RMS wells.

***Subtask 2.2. Develop groundwater extraction data for the preceding water year, including a summary by water use sector, a description of measurement methods and accuracy, and a map showing the location/volume of extractions.***

Total groundwater extractions will be summarized by water use sector (in tabular and map form), and the method and accuracy of the measurements will be identified (distinguishing volumes recorded by metered groundwater pumps and volumes estimated by crop evapotranspiration). All data and methods used to characterize groundwater extractions will be based on the best available measurement methods and best available science, and will be described in the Annual Report.

***Subtask 2.3. Calculate surface water supply used or available for use, including that used for groundwater recharge and in-lieu use.***

The volume of surface water supply used or available for use will be summarized as the difference between surface water inflows and outflows to and from the GSP area. All surface water supply used in the Chowchilla Subbasin will be reported based on annual quantitative volumetric data, will show whether the supply was used for direct groundwater recharge or in-lieu recharge, and will identify all applicable water source types for each GSA.

***Subtask 2.4. Calculate total water use, summarized by water use sector and water source type, including a description of the measurement method and accuracy.***

The water budgets for the four GSAs will be completed for water year 2022, and total water use tables will be developed by water use sector and water source type. Water use data will be collected using the best available measurement methods. The method and accuracy of measurements will be described.

***Subtask 2.5. Calculate change in groundwater storage.***

***Subtask 2.5.1. Develop change in groundwater storage maps for each principal aquifer for the period Spring 2021 to Spring 2022.***

Groundwater level data from RMS and other appropriate monitoring network wells will be used to develop groundwater storage change maps for the Upper/Unconfined Aquifer and the Lower Aquifer (where present) for water year 2022. In accordance with GSP regulations, these maps will represent changes in groundwater storage between springtime periods from Spring 2021 to Spring 2022. The resulting groundwater storage change maps will be reviewed in light of climatic and surface water supply conditions that occurred over the 2021 to 2022 time frame.

***Subtask 2.5.2. Develop graph showing water year type, groundwater use, annual change in storage, and the cumulative change in storage (including from October 1, 2014, through water year 2022) based on surface system water budget analyses.***

Graph showing water year type, groundwater use, annual change in storage, and the cumulative change in storage (including from October 1, 2014, through water year 2022) based on surface system water budget analyses. The groundwater storage change maps prepared under Subtask 2.5.1 will be reviewed in combination with water year type, surface water availability and groundwater use, and longer term cumulative change in storage to evaluate recent groundwater conditions through water year 2022.

**Task 3. Prepare a Description of Progress Towards Implementing the GSP.**

This task will summarize all applicable information to describe progress towards implementing the Chowchilla Subbasin GSP, with particular focus on activities since the previous Annual Report. Specific reference will be made to progress toward achieving interim milestones and progress toward implementation of projects and management actions. A summary of the GSP revisions in 2022 will also be provided.

**Task 4. Prepare an Annual Report Containing All Components Required by DWR as Stated in the GSP Regulations (Table 1).**

In accordance with the GSP regulations, the DE-LSCE Team will prepare all of the required GSP Annual Reporting submittals, including an Annual Report document along with a copy of the GSP monitoring data.

***Subtask 4.1. Prepare draft and final Annual Report.***

A draft Annual Report will initially be prepared using information received from the GSAs and the results of the other tasks in this task order. Following review and feedback from GSAs, the DE-LSCE Team will revise the draft Annual Report and prepare the final Annual Report in a format suitable for submittal to DWR through the SGMA Portal.

***Subtask 4.2. Submit copy of the monitoring data.***

A copy of the monitoring data collected from all available RMS sites will be submitted to DWR through the SGMA Portal Monitoring Network Module.

**Task 5. Review and Assess Subsidence Monitoring Data.**

This task includes review and assessment of subsidence monitoring information for the preceding water year. Under this task, readily available public subsidence monitoring data from sources including DWR, USBR, USGS, UNAVCO (Plate Boundary Observatory), and NASA Jet Propulsion Laboratory for the period relevant to the Annual Report will be reviewed and evaluated in relation to groundwater level trends in the Chowchilla Subbasin, with particular attention to water level RMS locations. Information from this evaluation will be integrated into the GSP Annual Report, as determined appropriate.

**Task 6. Complete Annual Groundwater Model Update (Optional).**

This task includes conducting a limited annual update to the groundwater model. The model update will include incorporation of updated data in model files related to land use and water demands (root zone/IDC files), surface water inflows, and surface water diversions/deliveries for the most recent water year covered in this annual report to keep the model hydrology up to date. In addition, the model boundary conditions will be reviewed and updated as needed based on available data for the most recent water year. No additional model calibration will be conducted as part of this effort (model calibration is expected to be included in future work on the five-year GSP update). The annual model update will focus on keeping the model hydrology current for use in more accurate simulation of current and projected groundwater levels and for comparing with measured groundwater levels and sustainable management criteria defined in the GSP.

**Task 7. Perform General Services Including Interbasin Coordination, SGM Grant Application Assistance, POC meeting participation, Domestic Well Mitigation Program Support, Water Quality Evaluation, and Others, as Requested (Optional).**

This task encompasses additional general services that may be identified and requested by the GSAs during and following preparation of the GSP Annual Report. Such tasks may include interbasin coordination; participation in Basin Point of Contact (POC) meetings; support during development of the Domestic Well Mitigation Program; further data review and analyses related to water quality, groundwater dependent ecosystems (GDEs), and monitoring network data gaps; or other items as requested by the GSAs.

**Table 1. Summary of GSP Annual Report Requirements and Associated Tasks.**

<b>GSP Regulations (23 CCR) Section</b>	<b>Description</b>	<b>Task(s) to Fulfill Requirements</b>
§356.2	Submit an Annual Report to DWR by April 1 that includes the following components for the preceding water year:	4
(a)	General information, including an executive summary and a location map depicting the subbasin covered by the Annual Report.	1
(b)	Detailed description and graphical representation of the conditions of the subbasin managed in the GSP:	2
(b)(1)	Groundwater elevation data (contour maps, hydrographs)	2.1
(b)(2)	Groundwater extraction data (table, map)	2.2
(b)(3)	Surface water supply used or available for use, groundwater recharge, or in- lieu use	2.3
(b)(4)	Total water use	2.4
(b)(5)	Change in groundwater storage (maps, graph)	2.5
(c)	Description of progress toward implementing GSP, achieving interim milestones, and implementing projects or management actions since the previous Annual Report.	3, 5
§354.4	Include a copy of the monitoring data from the Data Management System in the Annual Report	4.2

### 3.2 Deliverables

The following deliverable(s) will be provided to Chowchilla Subbasin GSAs:

1. Draft GSP Annual Report, prepared and submitted to the GSAs for review.
2. Final GSP Annual Report, revised per comments from the GSAs and submitted to DWR.
3. A copy of the monitoring data for the GSP Annual Report reporting period, included in the Annual Report submittal to DWR.
4. Updated Groundwater Model. The model update will include incorporation of updated data in model files related to land use and water demands (root zone/IDC files), surface water inflows, and surface water diversions/deliveries for the most recent water year covered in this annual report to keep the model hydrology up to date. No additional model calibration will be completed as part of this proposal (Optional task).
5. Other work products identified as part of Task 7 and as mutually agreed to by the DE-LSCE Team and the GSAs (Optional task).

### 3.3 Assumptions

The following assumptions were made in developing this proposal. To the extent that these assumptions do not hold true, the effort and therefore the cost and schedule required to perform the professional services could be affected.

1. Client will work cooperatively with the DE-LSCE Team and will respond in a timely manner to the DE-LSCE Team’s information requests.

2. The DE-LSCE Team will not be responsible for providing any legal advice, legal guidance and/or legal opinions.
3. Client will be the lead for all stakeholder outreach, as required.
4. All meetings will be held remotely, with the exception of one in-person meeting to present the Draft GSP Annual Report to the GSP Advisory Committee.
5. There will be one round of comments and revisions for the GSP Annual Report.
6. The GSP Annual Report deliverables will be provided in digital format according to the formats required by DWR.
7. The cost of Task 7 is based upon the DE-LSCE Team’s best understanding of future professional services that may be required by the GSAs at the time this proposal was prepared. It is assumed that Client and DE will evaluate any differences in the estimated cost and the actual cost, if required.
8. Project work required and/or requested by Client which is not covered in this proposal shall be paid for by Client on a time and materials basis at the applicable DE-LSCE Team rates then in effect.
9. Should Client wish to proceed with optional task 6, such work will be limited in scope as set-forth here. Specifically, no model calibration will occur as part of work under this proposal.
10. The DE-LSCE Team cannot guarantee approval of the Annual Report by DWR.

### 3.4 Schedule

A preliminary timeline for tasks described in the proposed draft scope of work for preparation of the GSP Annual Report is presented below. This schedule provides time for GSA review of the draft documents and finalization and submittal of the GSP Annual Report by April 1, 2023, in accordance with SGMA requirements.

Tasks		2022			2023			
		Oct	Nov	Dec	Jan	Feb	Mar	Apr
Task 1.	Prepare general Information, including an Executive Summary and a map of the Chowchilla Subbasin location.							
Task 2.	Prepare a detailed description and graphical representation of groundwater conditions and water budget components managed in the Chowchilla Subbasin.							
Task 3.	Prepare a description of progress towards implementing the GSP.							
Task 4.	Prepare an Annual Report containing all components required by DWR, as stated in the GSP regulations.							
Task 5.	Review and assess subsidence monitoring data.							
Task 6.	Annual Groundwater Model Update							
Task 7.	General services including interbasin coordination, water quality evaluation, and others, as requested.	<i>As requested through September 30, 2023.</i>						

Key Milestones:	<p>Required data will be requested and received from the GSAs by December 1, 2022. Draft Annual Report will be submitted to the GSAs for review by February 22, 2023.</p> <p>Comments will be received from the GSAs by March 8, 2023.</p> <p>Final Annual Report will be ready for submittal by March 24, 2023.</p>
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### 3.5 Cost Proposal

The DE-LSCE Team costs associated with performing this task order will be billed to the CLIENT on a time and materials basis not to exceed the selected task totals without prior written authorization. The task totals include:

- **Tasks 1-5: \$53,281** for developing and submitting the GSP Annual Report for water year 2022, including reviewing and assessing subsidence monitoring data,
- **Optional Task 6: \$15,752** for updating the groundwater model through water year 2022, and
- **Optional Task 7: \$41,532** for other general services, as needed.

The budget build-up is summarized in the Cost Summary Table below, including estimated person-hours by task, along with 2022 hourly rates by labor classification. Hourly labor rates are subject to revision at the beginning of each calendar year, but the estimated budget will remain the same. While estimated costs are based on a detailed task-by-task buildup, actual project costs will not necessarily be tracked on a task basis, nor will individual task budgets constrain charges for work performed up to the total estimated budget.



Project Task/Subtask	Labor Costs (Hours)										Labor Costs Subtotal (\$)	Direct Costs Current IRS Mileage (\$ / mile) Unit Rates \$0.585	Direct Costs Subtotal (\$)	Total Cost (\$)
	DE Principal Engineer	DE Associate Engineer I	DE Assistant Engineer II	DE Staff Project Assistant	DE Associate Project Assistant	LSC Senior Principal	LSC Principal Hydrogeologist	LSC Project Hydrogeologist/GIS	LSC Word Processing	Hourly Rates				
	\$233	\$175	\$129	\$81	\$94	\$235	\$225	\$160	\$97					
<b>Task 1 - General Information</b>														
1.1 General Information	3	4	2	2		2	2	2			\$3,059			\$3,059
<b>Task 1 Subtotals</b>	3	4	2	2		2	2	2			\$3,059			\$3,059
<b>Task 2 - Groundwater Conditions and Water Budget Components</b>														
2.1 Groundwater Elevations						4	8	24			\$6,580			\$6,580
2.2 Groundwater Extraction	8	16	8	4							\$6,020			\$6,020
2.3 Surface Water	4	4	6	8							\$3,054			\$3,054
2.4 Total Water Use	4	4	6	8							\$3,054			\$3,054
2.5 Groundwater Storage Change						4	4	10			\$3,440			\$3,440
<b>Task 2 Subtotals</b>	16	24	20	20		8	12	34			\$22,148			\$22,148
<b>Task 3 - Description of GSP Implementation Progress</b>														
3.1 Description of GSP Implementation Progress	4	8	3	3		4	4	2			\$5,122			\$5,122
<b>Task 3 Subtotals</b>	4	8	3	3		4	4	2			\$5,122			\$5,122
<b>Task 4 - Annual Report Preparation</b>														
4.1 Draft Annual Report	2	12	8	4	2	8	8	12	2		\$9,904	400	\$234	\$10,138
4.2 Final Annual Report	2	12	4	4	2	6	4	8	1		\$7,281			\$7,281
<b>Task 4 Subtotals</b>	4	24	12	8	4	14	12	20	3		\$17,185	400	\$234	\$17,419
<b>Task 5 - Subsidence Data Review/Groundwater Model Update</b>														
5.1 Subsidence Data Review/Assessment	1					4	8	16			\$5,533			\$5,533
<b>Task 5 Subtotals</b>	1					4	8	16			\$5,533			\$5,533
<b>Task 6 - Annual Groundwater Model Update</b>														
6.1 Groundwater Model Update	12	24	24			2	6	24			\$15,752			\$15,752
<b>Task 6 Subtotals</b>	12	24	24			2	6	24			\$15,752			\$15,752
<b>Task 7 - General Services, As Needed</b>														
7.1 General Services, As Needed (Upon Request by GSAs)	44	32		20		32	28	64			\$41,532			\$41,532
<b>Task 7 Subtotals</b>	44	32		20			28	64			\$41,532			\$41,532
<b>Total, GSP Annual Report (Tasks 1-5)</b>	28	60	37	33	4	32	38	74	3		\$53,047	400	\$234	\$53,281
<b>Total, GSP Annual Report Plus Modeling (Tasks 1-6)</b>	40	84	61	33	4	34	44	98	3		\$68,799	400	234	\$69,033
<b>Total, GSP Annual Report Plus General Services (Tasks 1-5, 7)</b>	72	92	37	53	4	32	66	138	3		\$94,579	400	234	\$94,813
<b>Grand Total (Tasks 1-7)</b>	84	116	61	53	4	34	72	162	3		\$110,331	400	234	\$110,565

## 4 Task Order Signatures

### Approved for CLIENT

Signed: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

### Accepted for Davids Engineering, Inc.

Signed: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_