



GHD
Syar Napa Quarry
Water Supply Assessment

August 2013

Table of contents

1.	Introduction.....	2
2.	Project Description	2
2.1	Water Supply	3
3.	Water Supply Planning.....	4
3.1	Is the Proposed Project Subject to CEQA?	4
3.2	Is the Proposed Project a “Project” Under SB 610?	4
3.3	Is there a Public Water Supply System that Will Service the Proposed Project?	4
3.4	Is there a Current Urban Water Management Plan That Accounts for the Project Demand?	4
3.5	Is Groundwater a Component of the Supplies for the Project?	5
3.6	Are there Sufficient Supplies to Serve the Project Over the Next Twenty Years?	5
4.	Proposed Project Water Supply	5
4.1	Surface Water Detention Ponds	5
4.2	Groundwater Well Systems	5
4.3	Available Groundwater Supply	6
4.4	Additional Water Sources	6
5.	Project Water Demand.....	6
5.1	Baseline Condition	7
5.2	Project Conditions	9
6.	Dry Year Supply	9
7.	Findings.....	9
8.	References Cited	10

Table index

Table 1.	Existing and Proposed Annual Quarry Production.....	2
Table 2.	Source of Data for Approximation of Water Demands.....	7
Table 3.	Estimate of Water Demand Based on Data from 2009 and 2011	8
Table 4.	Baseline Conditions Water Demand	8
Table 5.	Project Water Demands	9

1. Introduction

Syar Industries, Inc. (Syar) operates Syar Napa Quarry, which currently accommodates active quarrying and processing activities. The quarry is currently permitted by Napa County in Use Permit (UP) UP-128182 and UP-27374. Syar is proposing a project to increase production at the facility and expand the mining area. In consideration of the proposed project, an environmental review is being conducted under the requirements of the California Environmental Quality Act (CEQA). This report has been prepared to support the environmental review and provides an assessment of water supply adequacy for the proposed Project in accordance with the California Water Code (Water Code).

This report provides an assessment of available water supplies to determine if they are sufficient to serve the demand generated by the Project, as well as the reasonably foreseeable demand in the region over the next 35 years under average normal year, single dry year, and multiple dry year conditions.

2. Project Description

Syar proposes to expand the existing Syar Napa Quarry, increased production, and extend the term of its current UP until approximately 2048. Syar has applied for a Surface Mining Permit (SMP) (number P08-00337-SMP) from Napa County to enable expansion of the quarry. The proposed project would allow mining in both the existing and expanded quarry for a 35-year period, from approximately 2013 through 2048, as proposed in the 2012 Napa Quarry Mining and Reclamation Plan (MRP) prepared for the project. The project would result in an approximately 124-acre expansion of the existing 497 acres presently disturbed by mining at the project site. Mining would occur to a maximum depth of approximately 50 feet above mean sea level. The project would increase the total permitted saleable amount of aggregate and aggregate-related materials, as shown in Table 1, below.

Table 1. Existing and Proposed Annual Quarry Production

	Existing ² (millions of tons)	Proposed
Total Processed ¹	0. 81	2. 00
Total Extracted ^{3,4}	0. 68	1. 65

Total processed saleable aggregate and aggregate-related materials include: (1) aggregate extracted from the quarry except overburden; (2) material barged from offsite that is used as a component in the production of other materials; (3) recycled material from offsite; (4) and onsite interplant transfers. Based on annual average from 2004 to 2008 (Source: Syar Inc.).

Total extracted from quarry equals total processed minus: (1) material barged from offsite that is used as a component in the production of other materials; (2) recycled material from offsite; (3) and onsite interplant transfers (Source: Syar Inc.).

Approximately 75 percent of total extracted material is saleable; remaining 25 percent is non-saleable overburden and waste rock (Source: Syar Inc.).

The objectives of the project are:

- To continue profitable operation of the existing Syar Napa Quarry by providing a local, reliable, affordable, and consistent source of aggregate and aggregate-related materials to customers in the Napa region;

- To extend the life of the existing quarry in a location where potential environmental effects can be avoided or minimized without rendering the project economically infeasible;
- To extend the life of the existing quarry in such a manner as to increase production of high quality aggregate and aggregate products in conformance with state and local goals and objectives, including the Napa County General Plan (which designates the site as Mineral Resource (MR)) and the policies of the SMGB (which has designated the site as a resource of regional significance);
- To increase the annual permitted saleable quantity of aggregate and aggregate- related materials from one million tons to approximately two million tons to facilitate state and local policy of meeting local demand with local resources;
- To extend the life of the existing quarry to profitably and environmentally meet long-term local needs for aggregate materials in the Napa region through continued operation of the existing facilities, including the rock processing plant, sand plant, two asphaltic concrete (AC) plants, and the aggregate base (AB)/recycling plant;
- To extend the life of the existing quarry and in so doing aid implementation of state and local goals to reduce the loss of high quality productive agricultural land as well as minimize greenhouse gas emissions and fossil fuel use by providing a local aggregate resource;
- To help fulfill California's need to permit additional aggregate resources to meet current and expected demand for public and private infrastructure improvements;
- To utilize Reclaimed Asphalt Pavement (RAP) handling equipment at the Syar Napa Quarry and in so doing aid implementation of state and local goals to facilitate local production and reuse of high quality aggregate products;
- To improve and refine commitments for surface mine reclamation during and after active mining; and
- To relocate sections of the existing Skyline Wilderness Park trail currently located on the project site so that it is permanently accessible to the public by returning it to land within Skyline Wilderness Park.

2.1 Water Supply

Currently, there are two water supply systems operated by Syar that are associated with the Syar Napa Quarry. One system owned and operated by Syar, and referred to as the Syar Water System (SWS), is a non-public water system that supplies potable water to: the Syar Industries Corporate Office Property (APN 046-370-002), the Whal Property (APN 046-370-021, containing Pacific Supply), the Boca Company Property (APN 046-370-024, containing Shamrock Materials), and the Benson Kaiser Road Property (APN 046-370-003, containing Pacific Coast Steel). The well that supplies the SWS (2800580-001, also known as Latour Court Well) is located on Latour Court.

The second water system, referred to as the Quarry Well system, is located in the southeast corner of the Boca property (APN 046-370-024), which abuts the Syar Napa Quarry to the north. Water for the second water system is supplied by a groundwater well and associated water tank, which currently supply non-potable water for quarry operations. Production from this would continue under the proposed project. There is also a backup well to the Quarry Well located approximately 600 feet south on the Syar Napa Quarry property (APN 046-370-025) that would be utilized should the Quarry Well become inactive due to necessary repairs or other

circumstances. Syar also uses water from on-site stormwater detention ponds for dust suppression throughout the quarry and for washing sand and aggregate materials. No improvements are proposed to the existing water system and no new wells are proposed as part of the project.

3. Water Supply Planning

State Water Code, as amended by SB 610, requires the preparation of a Water Supply Assessment for some types of projects subject to CEQA. The first steps in the WSA process are to determine whether SB 610 applies to the proposed project. The determination is made by addressing the following questions:

1. Is the proposed Project subject to CEQA?
2. Is the proposed Project a "Project" under SB 610?
3. Is there a public water system that will service the proposed Project?
4. Is there a current UWMP that accounts for the project demand?
5. Is groundwater a component of the supplies for the Project?
6. Are there sufficient supplies to serve the Project over the next twenty years?

Each of the questions is addressed in the following sections as they relate to the Syar Napa Quarry project.

3.1 Is the Proposed Project Subject to CEQA?

The proposed Syar Napa Quarry project is subject to the CEQA process because the project requires the issuance of a permit by public agencies. A Water Supply Assessment therefore may be required to support the environmental review being conducted by Napa County.

3.2 Is the Proposed Project a "Project" Under SB 610?

The proposed project would result in an approximately 124-acre expansion of the existing 497 acres presently disturbed by mining at the project site; therefore, the proposed project has been interpreted to meet the definition of "project" under Water Code Section 10912(a) because the project occupies more than 40 acres.

3.3 Is there a Public Water Supply System that Will Service the Proposed Project?

There are no public water systems that deliver potable (appropriate for human consumption) water to the project site. Potable water is supplied by bottled water.

3.4 Is there a Current Urban Water Management Plan That Accounts for the Project Demand?

There is an Integrated Water Resource Management Plan program and the City of Napa has developed an Urban Water Management Plan that accounts for commercial water use in the project area. The project water demands are not specifically mentioned in the plan.

3.5 Is Groundwater a Component of the Supplies for the Project?

Groundwater is a component of the water supplies for the project. A discussion of groundwater use is found in Section 5.

3.6 Are there Sufficient Supplies to Serve the Project Over the Next Twenty Years?

The sufficiency of water supply for the proposed Project is addressed in Section 7.0, below. The proposed Project is being evaluated for a 35- year permit. As such, the sufficiency of supplies are considered over the permitted life of the Project, not just 20 years as is typically done.

4. Proposed Project Water Supply

Water is used at the quarry for several purposes including dust suppression (roads, stock piles, and process equipment), material (sand and gravel) washing, and minor utility uses at the site offices (bathrooms). Water will also be used for mitigation and irrigation of reclamation re-vegetation.

Currently the Syar Napa Quarry facilities are not connected to a municipal water source and all water demand at the quarry will be met through:

- surface water pumping from onsite detention ponds that capture storm runoff and runoff from other quarry process, such as sand and aggregate washing,
- groundwater extraction from wells,
- City of Napa recycled water, from recycled water line that runs along the railroad right of way near the Napa River, on Syar property,
- sand plant water recovery system, and
- water reduction measures, such as application of gravel or surfactants to roads for dust suppression.

4.1 Surface Water Detention Ponds

There are a number of surface water detention ponds at the site that are in both natural depressions and constructed ponds. The constructed ponds are a result of mining rock and stormwater runoff water quality measures. The ponds due to mining are the result of removing material and the resulting in the creation of a pit that collects surface water runoff and subsurface flow through exposed fractures in the rock. The stormwater detention ponds are designed to collect and detain stormwater runoff and release flow to streams at a rate that replicates the pre project conditions. The stormwater detention ponds also allow the detained water in infiltrate into the subsurface, which recharges the local aquifer. While these pits and detention ponds are outside of the regional aquifer (MST Zone), they are hydraulically connected and act as recharge areas for the regional aquifer. Therefore, surface water extractions from pits and detention ponds are essentially a groundwater withdrawal.

4.2 Groundwater Well Systems

The groundwater used at the quarry comes from two wells: Latour Court Well and Quarry Well. There is another well, Well #4, which is not currently used for groundwater extraction. It is currently

used as a monitoring well. In the future, Well #4 may be used as a backup emergency groundwater extraction well for quarry operations.

Well #4 and the Quarry Well are located within the southern portion of the MST and the Latour Court Well is in the northern portion of the Jamison/American Canyon subarea. The subarea boundaries are based on geographic, geologic, and political boundaries.

The Quarry Well and Well #4 are hydraulically connected to one another. Pumping of the Quarry Well correlates consistently to drawdowns of one to two feet observed in Well #4. Both the Quarry Well and Well #4 exhibit rapid recharge after pumping from the Quarry Well is discontinued. The relatively small drawdown and the rapid and consistent recovery in water levels suggest that if these wells were pumped for longer periods of time the effect on the elevation of groundwater would be minor and in proportion to the increase in pumping volume.

4.3 Available Groundwater Supply

Over the many years that the Syar Napa Quarry has been in existence, there has not been a need to account for the amount of water that is required to facilitate the quarry operations. Water has always been available in abundance by way of a water well field that was developed by the C&H Sugar Company many years ago, just south of Kaiser Road. Under the proposed project, groundwater would continue to be extracted at the rate of existing conditions, with no additional groundwater extractions above the baseline extraction rates.

4.4 Additional Water Sources

If additional water is needed for dust control or irrigation, Syar would enter into an agreement to buy recycled water from the City of Napa to take care of this increased demand. The Napa Sanitation District currently produces recycled water from wastewater effluent that has been further treated and disinfected to provide a non-potable (non-drinking water) water supply. The Sanitation District currently process nine million gallons per day. Recycled water is safe and suitable for irrigation, dust suppression, and industrial processes. There is an existing recycled water line on Syar Napa Quarry property and service to quarry could easily be established. Syar has requested a service agreement from the Napa Sanitation District to supply up to 17 million gallons of recycled water per year. Although the Napa Sanitation District has not formally responded yet, they have indicated that they will likely be able to satisfy the demand. If the Napa Sanitation District is unable supply the amount of additional water needed for implementation of the proposed project, Syar will also install a water recovery system at its sand plant to recycle the water that is used in washing sand.

5. Project Water Demand

Current water demand is met through groundwater and pond pumping and estimates of the baseline water demands are based on available records of water use. The estimation of baseline condition for water demand is based upon the five-year average production rates from 2004 through 2009 of an average of 810,000 tons of materials sold. The proposed increase in mining production does not necessarily relate to a proportional increase in water consumption, because the same number of roads and stockpiles will require dust suppression regardless of the total production amounts. However, an increase in production may require some additional dust suppression and additional process water for material washing. Water demand for sand plant production accounts for

approximately 2.7% of the total water demand. Therefore, total project water demands are calculated as a percentage of the sand plant production.

5.1 Baseline Condition

The estimates of baseline water demands were based on the available data and approximated with various methods using a combination of metered flow, water truck counts, and pump operation records. It is assumed that all of the water used for dust suppression and material washing is evaporated and not re-infiltrated into groundwater.

The extraction rates from the Latour Court Well were metered by Syar in 2011. Extraction rates from the Quarry Well were developed by a combination of metered flowrates and water truck counts collected from April through September of 2009. The remaining months of 2009 were approximated by scaling the pumping rates from April through September 2009 to match the percent increase/decrease observed in the Latour Court Well. Extraction from ponds for dust suppression only occurs during May through October. The approximation of the extractions from ponds was based on a record of number of water truck fillings used during a 20 days period in May 2009. The number of water truck fillings during this period was used to estimate a typical monthly pond extraction rate. This rate was then applied to the months where water was extracted from ponds (May through October) for road dust suppression. Table 2 summarizes the source of water extraction data and Table 3 summarizes the approximation of yearly water demands for a low production year.

Table 2. Source of Data for Approximation of Water Demands

Source of Water Extraction	Available Data
Latour Court Well	Metered flow from January 2011 through December 2011
Quarry Well	Combination of metered flow and truck counts from April 2009 through September 2009, scaled from Latour Court Well for remaining months of 2009
Pond Pumping	Truck counts from May 2009 and used for other months of operation
Well #4	No extraction

Table 3. Estimate of Water Demand Based on Data from 2009 and 2011

Month	Latour Court** (gallons)	Quarry Well** (gallons)	Pond Pumping* (gallons)
January	818,300	614,000	0
February	1,223,800	918,000	0
March	779,300	584,000	0
April	1,949,100	1,462,000	0
May	2,537,000	1,903,000	1,619,000
June	2,601,000	1,951,000	1,619,000
July	1,803,400	942,000	1,619,000
August	1,611,000	1,988,000	1,619,000
September	1,952,400	1,116,000	1,619,000
October	1,094,500	969,000	1,619,000
November	810,700	561,000	0
December	794,400	507,000	0
Total	17,974,900	13,515,000	9,714,000
TOTAL WATER USAGE			41,203,900

Notes:

*Pond pumping number was obtained from water truck counts taken during the month of July 2009.

** This information was collected in 2011.

The average water demand for these years was 41,203,900 gallons per year. The water demand may be segregated into two categories: use for sand washing, and all other uses. The other uses include dust suppression for roads, rip rap plant, and aggregate piles. The production rates of sand are known for both the 2004-2009 and 2009-2011 time periods, and Syar uses 25 gallons of water to produce a ton of clean sand. This allows for the calculation of water demands for sand production. The remaining tonnage of material sold is rip rap, drain rock, aggregate base and asphalt.

During the 2009-2011 time period, Syar produced and average of 44,329 tons of sand products per year, which results in a use of 1,108,225 gallons of water. This is 2.7% of the total water demand, 41,203,900 gallons. The total water demand for the baseline condition is calculated from the percentage of known sand products production for the 2004-2009 period. The sand production of 49,474 tons per year is multiplied by 25 gallons per ton to yield the water demand for sand production of 1,236,850 gallons. The water demand for baseline conditions is calculated by dividing the water used for sand products by 2.7%, which yields 45,809,259 gallons. Table 4 presents a summary of the baseline conditions water demand.

Table 4. Baseline Conditions Water Demand

Base Condition Saleable Material 2004 thru 2009 (ton)	Average Sales of Sand Products 2004 thru 2009 (ton)	Water Used for Sand Products Production 2004 – 2009 (gallon)	Total Water Used for Baseline conditions (gallon)
810,000	49,474	1,236,850	45,809,259

5.2 Project Conditions

The proposed Project will result in sales reaching a maximum of 2,000,000 tons and water would be required for sand plant operations, dust mitigation, and biological mitigation/interim reclamation irrigation. To estimate water needs for that level of operation, the need for sand plant products is anticipated to increase to 66,000 tons annually. Therefore, there would be a total of 1,650,000 gallons of water needed for sand plant operations. The water demand for proposed project conditions is calculated by dividing the water used for sand products by 2.7%, which yields 61,111,111 gallons. An additional 1,000,000 gallons of water will be needed for mitigation and reclamation irrigation, for a total of 62,111,111 gallons of water demand for the proposed project. A summary of proposed project water demand is presented in Table 5.

Table 5. Project Water Demands

Project Condition Saleable Rock (ton/year)	Sand Plant Products (ton/year)	Water Used for Sand Products Production (gallon/year)	Water used for Mitigation and Reclamation Irrigation (gallon/year)	Total Water Used for Project (gallon/year)	Additional Water Needed for Project (gallon/year)
2,000,000	66,000	1,650,000	1,000,000	62,111,111	16,301,852

A project water demand of 62,111,111 gallons/year of water yields an increase of 16,301,852 gallons/year over the baseline conditions. Supply of this water may be achieved through a number of methods, including:

- Recycled water from the City of Napa,
- Water recovery system at its sand plant to recycle the water that is used in washing the sand, and/or
- Reduced water demands by alternative dust suppression methods, such as gravel application to roads and spray surfactants.

6. Dry Year Supply

A large portion of the proposed project water demand will be met through groundwater supply, up to the baseline condition extraction rate of 45,809,259 gallons per year. Through the many years that the site has been in operation water has always been available in abundance; therefore, a dry year is not expected to negatively impact water production related to groundwater. Groundwater levels observed in the area of the Latour Court Well show little variation seasonally and annually, including in dry years. This indicates stability in the elevation of groundwater in the regional aquifer.

7. Findings

This Water Supply Assessment has been prepared to support the CEQA environmental review and provides an assessment of water supply adequacy for the proposed Project. Water for the proposed project will be provided by groundwater pumping and pumping from detention ponds at rates up to but not greater than baseline conditions. Additional project water demands will be met by

purchasing recycled water from the City of Napa. In the event that recycled water is unavailable in sufficient amounts, water demands will be reduced through water demand reduction techniques, including: water recovery system at the sand plant to recycle the water that is used in washing the sand, and alternative dust suppression methods, such as gravel application to roads and spray surfactants. Syar estimates that water demand, due to alternative dust suppression methods on roads, may reduce total water demand by 20%. Total Project demand is estimated to be 62,111,111 gallons/year (190.6 acre foot/year). Of the 62,111,111 gallons/year, 45,809,259 gallons/year (140.6 acre foot/year) will come from pumping groundwater wells and surface detention ponds. The additional 16,301,852 gallons/year (50.0 acre foot/year) of water demand will be met through recycled water or water demand reduction. Given the supply of recycled water, as described in Section 4.4, the project water supplies are sufficient to serve the demand generated by the project, as well as the reasonably foreseeable demand in the region over the full life of the project.

8. References Cited

- DWR, 2003. *San Francisco Bay Hydrologic Region*. California's Groundwater Update 2003. Bulletin 118. California Department of Water Resources.
- Winzler & Kelly, 2012. Napa Quarry Proposed Expansion Surface Hydrologic and Sub-Surface Hydrogeologic Study, August 2012
- Luhdorff & Scalmanini Consulting Engineers, 2010. *Task 1 - Review of Existing Data and Documents on Hydrogeologic Conditions, Syar Quarry Expansion Project, Napa County*. Technical memorandum prepared for Winzler & Kelly. June.
- Luhdorff & Scalmanini Consulting Engineers, 2011. Napa County Groundwater Conditions and Groundwater Monitoring Recommendations, Final Report.i, February.
- Napa County, 2005. *Napa County Baseline Data Report*. Available online at <http://www.co.napa.ca.us/gov/departments/29000/bdr/index.html>.
- Napa County, 2008a. *Napa County General Plan*.
<http://www.countyofnapa.org/pages/departmentscontent.aspx?id=4294971554>
- Napa County, 2008b. Napa County Post-Construction Runoff Management Requirements.
- Napa County, 2011. Napa County Groundwater Conditions and Groundwater Monitoring Recommendations, Final Report, prepared by Luhdorff & Scalmanini, February, 2011.
- Perry, John. 2008. "Geologic Report Syar Napa Quarry" Kleinfelder West Inc.
- SFBRWQCB, 2007b. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan). California Regional Water Quality Control Board San Francisco Bay Region. January 18, 2007. Available online at <http://www.swrcb.ca.gov/rwqcb2/basinplan.htm>