

E

Type



Plans

WEL15-0030

Permit Number

9141

Street Number

GREEN VALLEY RD

Street Name

ETRA

Community Code

130-090-020

APN

Well Permit Application

WLS-031 x-street: Ross Rd

Site Address: 9141 Green Valley Rd, Graton, CA 95472
Owner Name: Manzana Products Co
Mailing Address: PO Box 209, Sebastopol, Ca 95473
Phone: 206-1983
Contact Person: Brandon Burgess

Permit Number: WEL15-0030
Assessor's Parcel Number: 130-090-020
Well Driller Name: WEEKS DRILLING & PUMP COMPANY
Mailing Address: P.O. Box 176, Sebastopol, CA 95473-0176
City/Town: Sebastopol, State: CA, Zip: 95473
License Number: 177681
Phone: 823-3184, Fax: 823-4258

The validity of this permit depends upon the accuracy of the information provided by the applicant. A site plan must accompany this application. In addition to the information required on the Minimum Standard Site Plan (Form CSS-019), the site plan shall also include the proposed well location, existing well(s) location(s), GPS coordinates of proposed well, sewer mains and laterals, and other potential sources of contamination.

INDICATE TYPE AND NUMBER OF PROPOSED WELLS/BORINGS:

Indicate use: Residential, Community, Irrigation, Industrial (checked)
Reason for new well: PROCESS WATER
Class I Well (checked), Class II Well, Reconstruction
Total number of wells on property: 3, Number in use: 3, Number inactive: 0, Number abandoned: 0
Well located within an existing public water system boundary: Yes (checked) No (checked) Name of System: MANZANA

CONSTRUCTION PROPOSED:

Casing: Diameter: 6", Gauge: SDR 21, Material: PVC
Gravel Pack (checked), Sand Pack (checked), Conductor: Yes (checked) No (unchecked)
Annular Space: Size: 2", Depth of Seal: 50' 100'
Seal Material: Bent-Cement
Method of Disinfection: HTH, Method of Sealing: Well Cap, Type of Joint: Glue-Spline

DESTRUCTION PROPOSED:

Well Diameter: Well Depth: Well Casing: Method of Destruction:

WORKER'S COMPENSATION DECLARATION
I hereby affirm under penalty of perjury one of the following declarations:
I have and will maintain a certificate of consent to self-insure for worker's compensation.
I have and will maintain worker's compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My worker's compensation insurance carrier and policy number are:
Carrier: State Comp, Policy No: 911374114
I hereby agree to comply with all laws and regulations of the County of Sonoma and State of California pertaining to water well construction. I will telephone (707) 565-1694 to notify the Environmental Health Specialist 24 hours prior to commencing this work. I will furnish the Permit and Resource Management Department and the owner a copy of the State Well Completion Report within thirty (30) days in order to obtain final approval on this well as required by SONOMA COUNTY CODE, CHAPTER 25B. I acknowledge that the application will become a permit only after site approval and payment of fee. I understand that this permit is not transferrable and expires one year from the date of issuance.
Signature of Well Driller: [Signature], Date: 1/21/15

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000), IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

DO NOT WRITE BELOW THIS LINE - To Be Completed by PRMD Staff
Site approved by: Maria Canana, Date: 6/12/15, Seal Inspection Date: 7/14/15, EHS: [Signature]
Finaled by: [Signature], Date: 06/02/16, GW Zone: 1 2 3 4
Comments: Well to be sampled quarterly for constituents of concern per [Signature]



May 27, 2015

Ms. Darcy Bering
County of Sonoma Department of Health Services
Environmental Health Division
625 5th Street
Santa Rosa, CA 95404

**SUBJECT: WATER SUPPLY WELL EVALUATION
MANZANA PRODUCTS COMPANY, INC.
9141 GREEN VALLEY ROAD, SEBASTOPOL, CALIFORNIA
EBA Project No. 10-1640**

Dear Ms. Bering:

This report presents the results of a water supply well evaluation performed by EBA Engineering (EBA) at Manzana Products Company, Inc. (Manzana), a former underground storage tank (UST) site located at 9141 Green Valley Road in Sebastopol, California referred to herein as the "project site". In January 2015, Weeks Drilling & Pump Company submitted a well permit application to the County of Sonoma Permit and Resource Management (PRMD) on behalf of Manzana for the installation of a water supply well in the northern portion of the project site (Figure 2, Attachment 1). In March 2015, PRMD forwarded the well permit application to the County of Sonoma Department of Health Services – Environmental Health Division (CSDHS – EHD) for review due to the active UST investigation at the project site. Also in March 2015, the Underground Storage Tank Cleanup Fund (USTCF) prepared a Review Summary Report which recommended that the on-site water supply wells' construction (screen intervals, etc.) and pumping rates be evaluated to determine whether the wells' screen intervals could potentially come into communication with contaminated water. In response to the above request and recommendation, the CSDHS – EHD issued a letter dated March 12, 2015 that required that the following information/evaluations be provided regarding the water supply wells located at the project site:

- *Obtain well construction logs for all onsite water supply wells (including DW-Southwest) and wells designated as DW-Warehouse and DW – 4050.*
- *Provide an evaluation as to whether the well screen intervals could potentially come into communication with contaminated groundwater and what the radius of influence of each well is relative to the release sites. A distance drawdown or other pump test methods may be appropriate for such a determination.*

- *Provide an evaluation as to the location and construction of the proposed new well at the site (PRMD Well Permit Application WEL 15-0030) and provide recommendations.*

In response to the above request, EBA obtained the available well construction logs for Manzana. EBA also conducted a limited pumping test using the on-site water supply well DW-Southwest as the pumping well, and water supply wells DW-Middle and DW-South and monitoring wells MW-4, MW-5 and MW-17 as observation wells. Water supply wells DW-North and DW-Warehouse 5 were not used during this test due to their distance from the pumping well (DW-Southwest). Finally, the data collected from the water supply well research and limited pumping test were evaluated in terms of the items requested above by the CSDHS – EHD. The following sections summarize the activities described above and present conclusions and recommendations thereof.

WATER SUPPLY WELL CONSTRUCTION INFORMATION

Findings from the research identified four water well driller reports (WWDR) for Manzana dating from 1954 to 2003. However, the only well for which a WWDR (2003) could be positively identified corresponded to DW-Southwest. Based on the WWDR, DW-Southwest is 300 feet deep and has a 100-foot surface seal and an effective screen interval of 100 to 300 feet below ground surface (BGS). The remaining three Manzana WWDRs were from 1954 and indicated addresses of 490 and 499 Green Valley Road. A review of the historical Sonoma County Telephone Directories located at the Sonoma County Library Annex indicated that the address for Manzana changed from 499 Green Valley Road to 9141 Green Valley Road between 1955 and 1956. This information suggests that the WWDRs from 1954 are for wells that are/were located on the project site or across Green Valley Road on an adjacent Manzana property (Figure 2, Attachment 1). These wells ranged in depth from 100 to 290 feet BGS and the surface seals ranged from 12 to 24 feet BGS with the gravel pack extending below the seals. Whereas it is possible that these WWDRs correspond to three of the four on-site water supply wells (DW-Warehouse 5, DW-North, DW-Middle and DW-South), the wellheads could not be accessed to verify well completion depths. Please note that EBA was not able to obtain a WWDR for the well designated as DW-4050 located at 9133 Green Valley Road.

LIMITED PUMPING TEST ACTIVITIES

On May 2, 2015, EBA conducted a limited pumping test at the project site. The test was designed to simulate normal operational water usage at the project site by pumping DW-Southwest. DW-Southwest was chosen as the pumping well because it is constructed using current well standards (i.e., materials, depth of seal, etc.) and is located a comparable distance from nearby shallow monitoring wells (MW-4 and MW-5) as the proposed new well location is to petroleum hydrocarbon impacted shallow monitoring wells in the northern portion of the project site (i.e., MWN-9). This strategy was chosen to determine if pumping DW-Southwest under normal daily water volume usage conditions (10,000 to 20,000 gallons per day [gpd]) would affect shallow

groundwater enough to artificially influence shallow groundwater contaminant migration. The resulting information would then be used to infer the conditions at the proposed new water supply well location, approximately 200 feet west of the on-site petroleum hydrocarbon plume (nearby monitoring well MWN-9) in the northern portion of the project site (Figure 2, Attachment 1).

The following table presents well information for the water supply wells and monitoring wells used during the limited pumping test activities.

WELL INFORMATION		
Pumping Well	Observation Well	Distance From Pumping Well (feet)
DW-Southwest	MW-4 ⁽¹⁾	190
	MW-5 ⁽¹⁾	135
	MW-17 ⁽¹⁾	280
	DW-Middle	109
	DW-South ⁽²⁾	108

(1) = Pressure transducer installed.

(2) = DW-South was inadvertently activated for approximately 100 minutes during test.

On May 1, 2015, EBA installed pressure transducers in monitoring wells MW-4, MW-5 and MW-17 and a barologger was installed in MW-5 to compensate for fluctuations in groundwater elevations due to changes in barometric pressure. Water supply wells DW-Middle, DW-South and DW-Southwest were deactivated at approximately 16:15 on May 1, 2015 to allow for the development of static groundwater conditions. The pressure transducers were programmed to record measurements at one minute intervals from approximately 14:15 on May 1, 2015 to 17:00 on May 3, 2015. This measurement period allowed the transducers to record groundwater elevation recovery data in the observation wells that may occur following normal facility operational pumping from DW-Middle, DW-South and DW-Southwest before the limited pumping test, as well as recovery data following the limited pumping test. At 07:33 on May 2, 2015, EBA established baseline depth to water measurements in the observation wells and subsequently activated DW-Southwest at 07:47 to initiate the limited pumping test.

DW-Southwest pumped at a rate of approximately 14 gallons per minute (gpm) from 07:47 to 20:29 on May 2, 2015 extracting a total of about 10,500 gallons. It should be noted that DW-South was inadvertently activated at approximately 14:30 by construction workers at the project site. DW-South pumped at an unknown rate until 16:18 when it was deactivated by EBA personnel.

During the limited pumping test, EBA personnel collected depth to water measurements in the observation wells to supplement the transducer data. Manual depth to water measurements were also collected from DW-Middle and DW-South because pressure transducers could not be installed in these wells.

LIMITED PUMPING TEST FINDINGS

As mentioned above, approximately 10,500 gallons of groundwater was pumped from DW-Southwest at a rate of about 14 gpm. Please refer to the graph included as Attachment 2 for a representation of the groundwater elevations in the observation monitoring wells. As shown on the graph, the groundwater elevations in MW-4, MW-5 and MW-17 increased during the limited pumping test period indicating recovery conditions from prior pumping in DW-Middle and DW-South. During this period, MW-5 experienced an approximately 0.50-foot decrease in groundwater elevation during the inadvertent pumping in DW-South. Upon deactivation of DW-South, the groundwater elevation in MW-5 resumed recovering at a similar rate as the prior recovery period observed when only DW-Southwest was pumping. These data indicate that DW-Southwest does not influence the groundwater elevation in the area of MW-4, MW-5 and MW-17, approximately 190 feet north, 135 feet northeast and 280 feet northeast, respectively. However, these data also indicate that the pumping from DW-South, which is located approximately 35 feet south of MW-5, directly influences the groundwater elevation in the immediate area.

In regards to the influence of DW-Southwest on deeper groundwater, it appears that the pumping lowered the groundwater elevation in DW-Middle by as much as ten feet from the top of the well casing. Groundwater elevations in DW-South, however, did not appear to be influenced during the limited pumping test.

CONCLUSIONS

Assuming two of the 1954 WWDRs correspond to DW-Middle and DW-South, gravel packs for these wells extend to within 12 to 24 feet BGS, which allows for communication with shallow groundwater as demonstrated during the inadvertent pumping of DW-South. However, historical groundwater sample analytical data from the water supply wells (DW-North, DW-Middle and DW-South) and monitoring wells located downgradient from the release site(s) (MW-4, MW-5, and MW-16) have not indicated the presence of petroleum hydrocarbon constituents. These data appear to indicate that either the pumping from DW-Middle and DW-South does not appreciably influence the migration of the petroleum hydrocarbon plumes or the petroleum hydrocarbon impacts in groundwater are attenuating prior to reaching the downgradient monitoring wells and shallow screened water supply wells at the project site.

In regards to the observed influence of DW-Southwest on DW-Middle but not on the remaining observation wells, the screen intervals in DW-Middle and DW-Southwest may be completed in a laterally continuous transmissive groundwater zone at depth which is not penetrated by the remaining shallower wells. This scenario would explain the observed conditions and indicate that pumping at depth should not have an appreciable influence on shallow groundwater flow conditions, provided the well's surface seal, gravel pack and screen interval are also completed at a sufficient depth (i.e., 100 feet BGS or greater).

As for the proposed new water supply well location, the limited pumping test was designed to provide information concerning the possible influence that pumping at the

proposed location may have on the shallow groundwater located in the area of the petroleum hydrocarbon plume in the vicinity of MWN-9 (Figure 2, Attachment 1). The results from this exercise appear to indicate that pumping 10,500 gallons from DW-Southwest in the southern portion of the project site did not influence shallow groundwater elevations in the observation monitoring wells. Given that the proposed new water supply well is being installed to supplement the existing water supply network, it is unlikely that it would be used as the sole source of water for the facility's process and domestic use. Under the scenario, it appears that the new water supply well will have little to no effect on the shallow groundwater elevations at its proposed location approximately 200 feet west of the groundwater impacts. This determination assumes that the aquifer conditions are similar in the northern and southern portions of the project site. Given that the project site is located in the Wilson Grove Formation, which generally consists of unconsolidated fine grained sand and is considered a major water bearing unit, the underlying aquifer likely exhibits similar characteristics over this short of a distance.

It should be noted that dual phase extraction (DPE) is scheduled to be used to remediate the petroleum hydrocarbon groundwater impacts in the northern portion of the project site. The DPE will use submersible pumps to extract groundwater which will also serve as a plume control measure and further reduce the likelihood of shallow contaminant migration towards the proposed new water supply well, located cross-gradient from the groundwater impacts.

It should also be noted that EBA drilled and collected groundwater samples from three deep soil borings (SB-1, SB-2 and SB-3) at the project site as part of a water supply well siting study (EBA, 2003). The locations of the soil borings are shown on Figure 2, Attachment 1. As shown on Figure 2, SB-3 is located proximal to the proposed new water supply well location. During the investigation, EBA collected discrete depth groundwater samples from the soil borings. A groundwater sample collected from SB-3 at a depth of approximately 140 feet BGS contained reported concentrations of the volatile organic compounds (VOCs) acetone and methyl ethyl ketone at 13 and 2.0 micrograms per liter, respectively. However, the detected VOCs do not appear to be related to the former USTs and it is possible that the detections represent an equipment, sampling or laboratory artifact.

LIMITATIONS


The information in this report represents the results of historical research and a limited pumping test. The findings and conclusions contained herein are based on a limited number of data points and information provided by others. The historical WWDRs have been inferred as representing the current water supply wells through deduction and historical context. This report is not a guarantee of groundwater quality or yield from any existing or future water supply wells at the project site. Additional investigation may reduce uncertainty with respect to the project site groundwater impacts or water well production.

If you have any questions regarding this report, please contact EBA at (707) 544-0784.

Sincerely,
EBA ENGINEERING

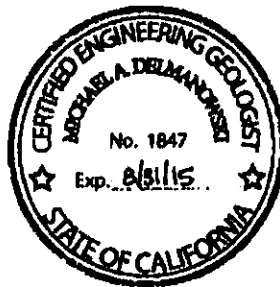
Prepared by






Paul Nelson, P.G.
Project Geologist

Reviewed by



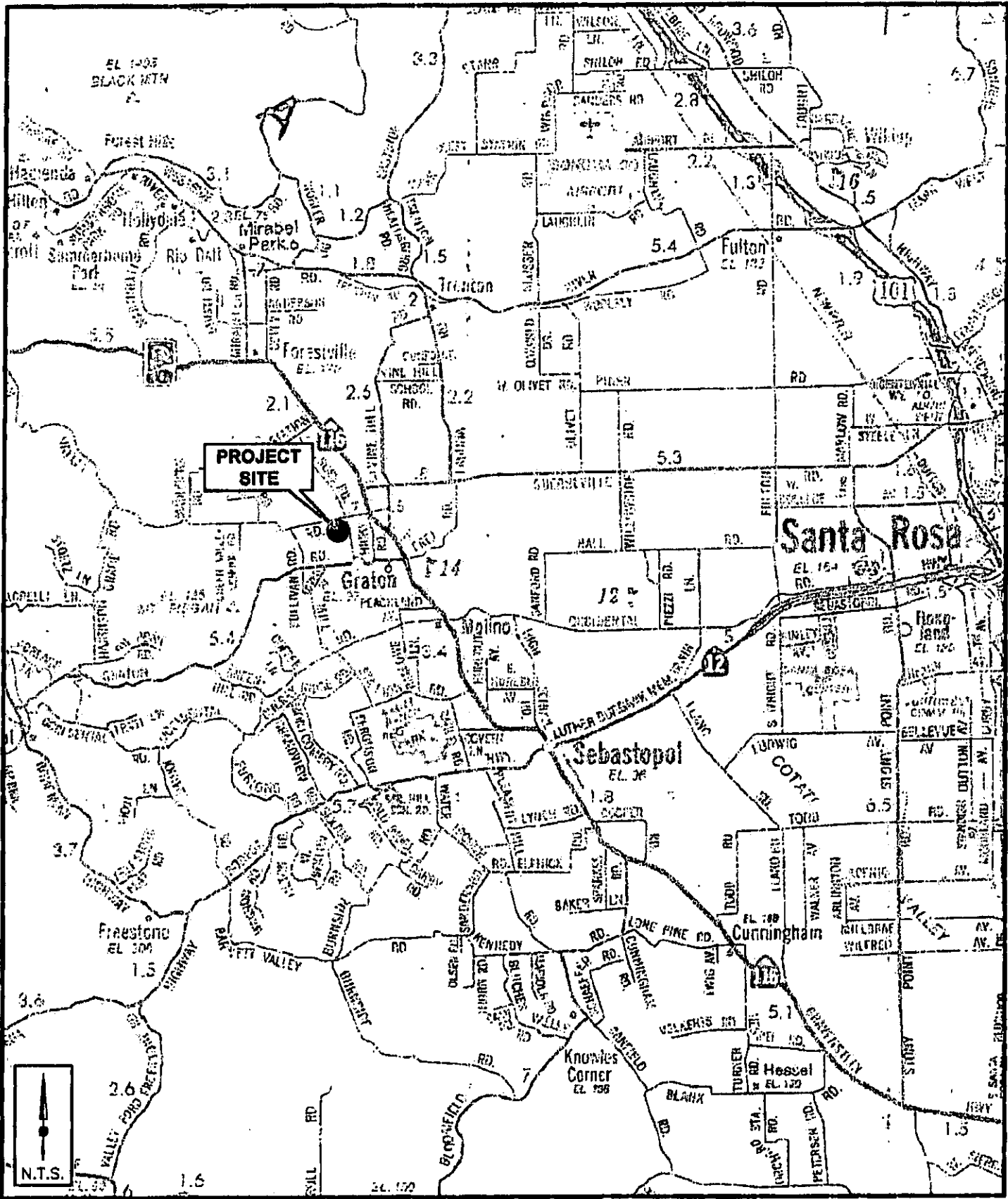


Mike Delmanowski, C.E.G., C.Hg.
Senior Hydrogeologist

REFERENCES:

EBA Engineering, *Siting Study, 9141 Green Valley Road, Sebastopol, California, July 2003.*

cc: Manzana Products Company, Inc., P.O. Box 209, Sebastopol, CA 95473



EBA
ENGINEERING

825 SONOMA AVENUE
SUITE C
SANTA ROSA, CA 95404
TEL: (707) 544-0784

LOCATION MAP

MANZANA PRODUCTS COMPANY INC.
9141 GREEN VALLEY ROAD
SEBASTOPOL, CALIFORNIA

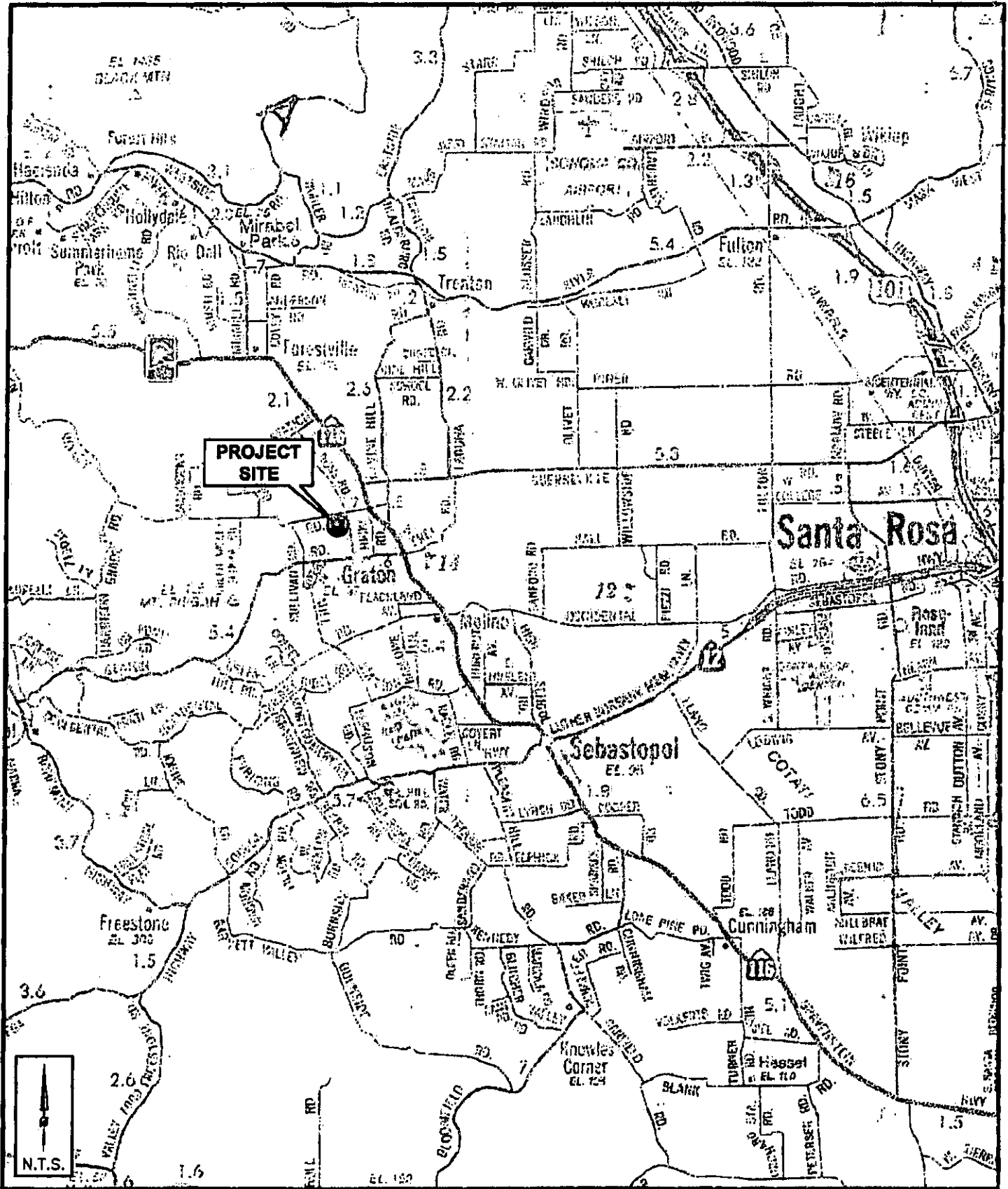
FIGURE

1

10-1840

ATTACHMENT 1

FIGURES



EBA
ENGINEERING

825 SONOMA AVENUE
SUITE C
SANTA ROSA, CA 95404
TEL: (707) 544-0784

LOCATION MAP

MANZANA PRODUCTS COMPANY INC.
9141 GREEN VALLEY ROAD
SEBASTOPOL, CALIFORNIA

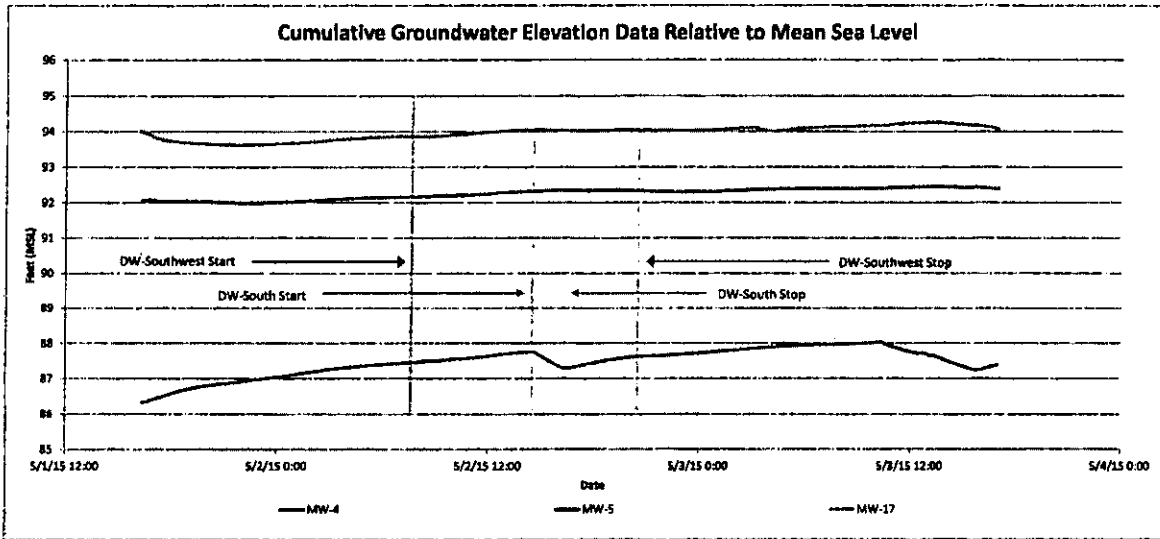
FIGURE

1

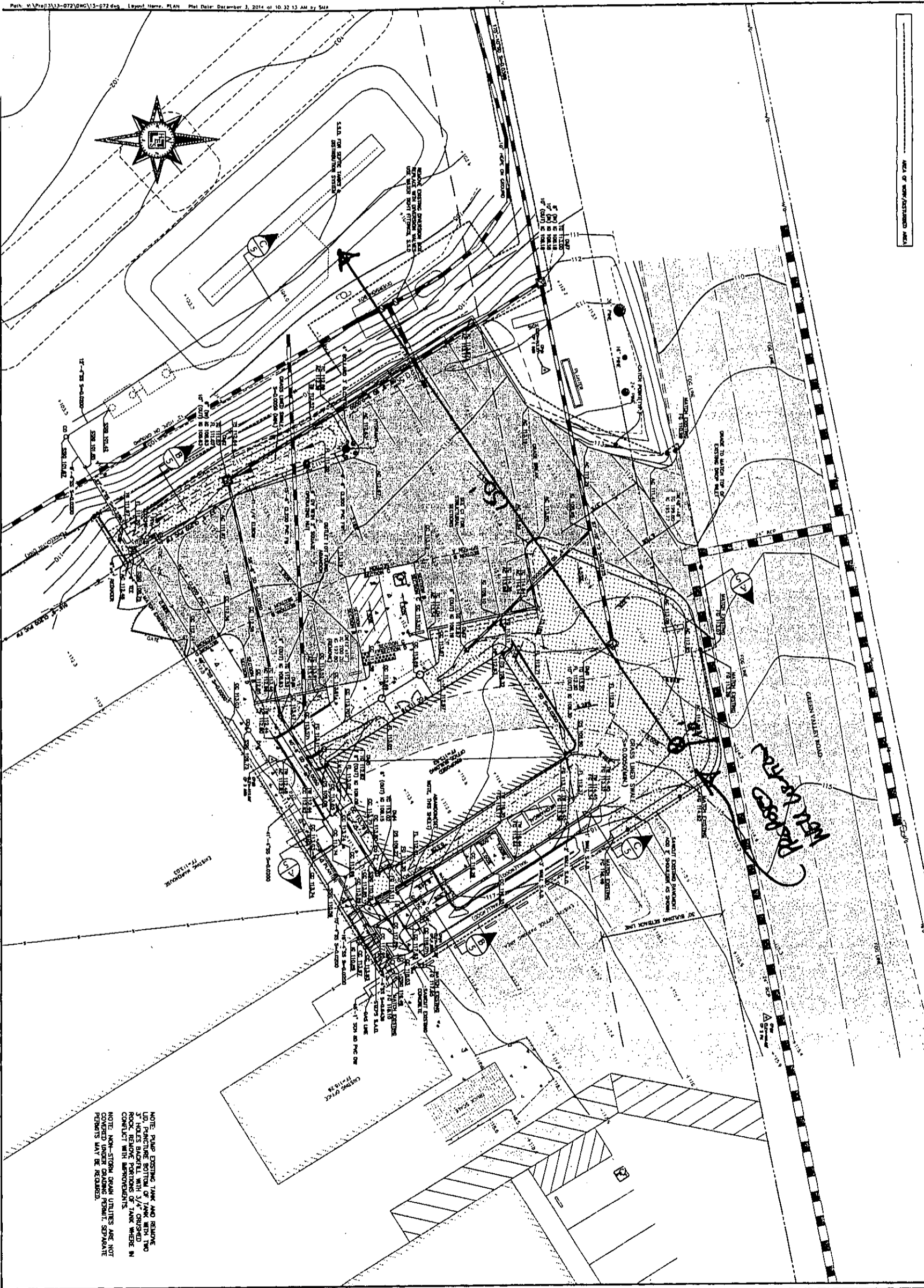
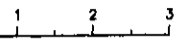
10-1840

ATTACHMENT 2

GRAPH



FOR REDUCED PLANS, THE ORIGINAL SCALE IS IN INCHES



NOTE: PUMP EXISTING TANK AND REMOVE
 1/2" HOLES BOTTOM OF TANK WITH TWO
 3" HOLES BARGE WITH 3/4" CRUSHED
 ROCK REMOVE PORTIONS OF TANK WHERE IN
 CONTACT WITH IMPROVEDMENTS
 NOTE: NON-STORM DRAIN UTILITIES ARE NOT
 COVERED UNDER DRAINAGE PERMIT. SEPARATE
 PERMITS MAY BE REQUIRED.

Rob Huffman

Manzana Products Co., Inc.
 Grading & Drainage Plan
 9143 Green Valley Road
 Graton, California
 A.P.N.: 130-090-020



REVISIONS		
#	Description	Date

Huffman Engineering & Surveying
 537 College Avenue, Suite A
 Santa Rosa, CA 95404
 (707) 524-4539
 www.huffman-engineering.com

Doc: 12/03/14
 Date: 12/03/14
 Drawn: SMA
 Check: SMA
 No: 13497Z
 of 7 sheets
C4